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Earth System Research Laboratory
Global Monitoring Division

GMD Aerosol Data Format

File Format Specifications [v2.83]

Last Modified 07/02/08

Go to File-Code

- This document describes the file formats used to store aerosol data at ESRL/GMD. There are three basic types of files: ambient aerosol, ambient meteorology, and sampling system state.
- All data files are plain ASCII text, in comma-separated, fixed-length fields. The end of a record is denoted by a linefeed character (ASCII hex 10), which optionally may be preceded by a carriage return.
- Universal Coordinated Time (UTC) is used for all time fields. For averaged data, the time reported is the start of the averaging interval.
- Basic aerosol data file record format: (stations with minimal instrumentation may truncate the records at the point where no additional data are available). Leading plus signs are replaced with a blank. This is the common format for the basic measurements obtained at a high time resolution. Missing value codes are always positive. For stations where a particular instrument is not present, the corresponding data field may be either empty or contain the missing value code for that parameter.
- Separate data and header files are used for each type of data. The data fields for ambient data are identical for all stations (although truncated records may be used for stations with limited instrumentation), while different data fields may be used in the sampling system state files from the various stations. There may even be several different types of sampling system state files for some sites.
- A flags field is used in ambient aerosol data files to indicate sampling conditions and data processing status.
- Aerosol light scattering and light absorption coefficients are reported relative to a particular temperature and pressure, either ambient or standard temperature (273.15K) and pressure. An STP correction bit in the flags field is used to denote which reference case is used.

Naming Convention

File names consist of content, status, time codes, and station identifiers. The general format is:
<FC><s><timecode>.<STN>
<FC> is a two character (with the exception of "volumes") File Code that indicates the general content.

File-Code	General content
a_	aerosol data (Old CP format)
ad_ & fd_	aerosol and filter digital data (ad_ is Old CP format)
af _& ff_	aerosol filter data (af_ is old CP format)
ageS	Averaged data segments
ag_	aerosol and GPS merged data
am_	aerosol monitor data
at_	aethelometer data -- old format
b__	UPS data
bm_	UPS monitor records
ca_	One minute averaged CN data
cm_	CN monitor data
da_	One minute averaged CCN data
ds_	The results of running a model to calculate the supersaturation of a given average
fm_	filter monitor records
f'w"	fitted f(RH) info for specific wavelength"w" (e.g., fr, fb or fg)
ft_	Filter sample time records
g__	GPS data
h_	"humidograph" data; A merging of several instruments at a one minute averaging frequency
hge	1 sec edited IAP data with GPS merged in
hgeS	segment averaged IAP data with GPS merged in
hm_	Humidograph set point channel changes
k_	aethalometer data
la_	one minute averaged data for the CLAP or PSAP
laeS	segment averaged lae data file with GPS data merged in
lm_	CLAP monitor records
lw_	3-wavelength PSAP data
m__	general monitor info
me_	ambient meteorological data; not produced by CPD; primarily exist with Older CP formated data
na_	One minute averages of Nephelometer data
nb_	zero-corrected na_ data file
nbN_eS	segment averaged naNe data file with GPS data merged in (see nb_ file type)
nc_	neph calibration results
ne_	neph state errors
nk_	neph span check report
nm_	neph monitor data
ns_	neph state data
nz_	na_ zero data file
oa, oc, oe, om,	wet neph filenames else the same as the na,nc, ...
p__	Present Weather Detector
pm_	LovePID data

si__	processed OPC data
sm_	output from scheduled tasks
sr_	raw OPC data
ss_	seconds and samples per sample period
ud_	umac digital state changes
ua_& um_	umac monitor records
vol & volumes	Weekly cumulative filter volume records
w__	Wind Speed and Wind Direction file
wm_	Watlow monitor data
wx_	Weather Data
a_[AHMD]	Averaged data
la_[AHMD]	Averaged data (la_ file format)

<**s**> is a one or two character Status Code indicating the processing state of the file

Status-Code	Data form
_	as high-resolution (usually minute) data
b,g,r	blue,green or red wavelength for f(RH) data
e	high resolution, edited data
eS	edited data for time segments.
h, H	as hourly averages
d, D	as daily averages
m, M	as monthly averages
A	"generic" average-formatted file
t	as 2-hour averages
w	as weekly averages

<**timecode**> is a string indicating time interval of contents

Timecode	Data Time Interval
X	the most recently processed data (usually one day)
cum	"cumulative", variable interval
Head	no time interval - this is a header file
<yr>w<wk>	one week of year <yr> beginning with week <wk>
<yr>Q<q>	one quarter of year <yr> beginning with quarter <q>
<yr>	year <yr>
<yr>d<doy>	one day of year <yr> beginning with DOY <doy>
<yr>m<mn>	one month of year <yr> beginning with month <mn>
YYYY_DDD_X	Data from year YYYY, day of year DDD, sequential label X varies from A-Z to allow multiple files per day.

<**STN**> is the three character station identifier (source of the data).

Station ID	Station location
air	Aircraft Field Campaigns
alt	Alert, Canada
amf	Arm Mobile Facility
bnd	Bondville, IL
bld	Boulder, CO
brw	Barrow, AK
cpo	Cheeka Peak, WA
cpt	Cape Point, South Africa
csj	Cape San Juan, Puerto Rico
cvi	Counterflow Virtual Impactor
iap	In-situ Aircraft Profiles
kco	Kaashidoo, Maldives
kos	Kosan, Cheju, South Korea
kpo	Kpuszta, Hungary
lab	Lab, Boulder, CO
lar	Laramie, WY
mln	Mauna Loa, HI [New]
mlo	Mauna Loa, HI
nsa	North Slope (Barrow), AK
nwr	Niwot Ridge, CO
p-3	p-3 flight
sfa	Surface Field Campaigns A
sfb	Surface Field Campaigns B
sfc	Surface Field Campaigns
sgp	So. Great Plains
smo	American Samoa
spo	South Pole
thd	Trinidad Head, CA
wlg	Mt. Waliguan, China
wsa	Sable Island, Canada

Field Separator

All files currently have a comma as the field separator.

Field definition

Each File Code, Status Code combination has a specific format, as described below:

File: a__<timecode>.<STN>

Return to File-Code

Col #	Name	Format and Missing Value	Description	Scanf info.

		Code (mvc)		
1	Station_ID STN	WSA	3-character ID code	%3s
2	Year	1993	Year	%4d
3	StartTime_UTC DOY	012.12345	DOY and FRACTIONAL_DOY (January 1 = 1)	%09.5f
4	Flags	0011	4-character code representing system status.	%4s
5	CN_control	±9.999e-99	Aerosol number concentration (cm^{-3}) measured with CNC on "control" inlet	%10.3e
6	CN_ambient	±9.999e-99	Aerosol number concentration (cm^{-3}) measured with CNC on "ambient" inlet	%10.3e
7	Bap_G	±9.999e-99	Aerosol light absorption coefficient (m^{-1}), green channel.	%10.3e
8	RefBsp_B	±9.999e-99	Aerosol total light scattering coefficient (m^{-1}), blue channel.	%10.3e
9	RefBsp_G	±9.999e-99	Aerosol total light scattering coefficient (m^{-1}), green channel.	%10.3e
10	RefBsp_R	±9.999e-99	Aerosol total light scattering coefficient (m^{-1}), red channel.	%10.3e
11	RefBbsp_B -or- Bsp_NIR	±9.999e-99	Aerosol backwards-hemispheric light scattering coefficient (m^{-1}), blue channel. For stations equipped with 4-wavelength nephelometers, this field is aerosol total light scattering coefficient (m^{-1}), near infrared channel.	%10.3e
12	RefBbsp_G	±9.999e-99	Aerosol backwards-hemispheric light scattering coefficient (m^{-1}), green channel.	%10.3e
13	RefBbsp_R	±9.999e-99	Aerosol backwards-hemispheric light scattering coefficient (m^{-1}), red channel.	%10.3e
14	RH_refNeph	±999	Relative Humidity (percent) inside nephelometer	%4d
15	T_refNeph	±999.9	Temperature (K) inside nephelometer	%5.1f
16	P_refNeph	±9999.9	Pressure (hPa) inside nephelometer	%7.1f
17	WS	±99.9	Local wind speed (m s-1)	%5.1f
18	WD	±999	Local wind direction (degrees True)	%4d

File: ad_<timecode>.<STN>, fd_<timecode>.<STN>

Return to File-Code

Col #	Name	Format and Missing Value Code (mvc)	Description	Scanf info
1	Station_ID	WSA	3-character ID code	%3s
2	Year	1993	Year	%4d
3	Time_UTC	012.12345	DOY and FRACTIONAL_DOY (January 1 = 1)	%09.5f
4	Flags	0011	4-character code representing system status.	%4s
5	Analyzers_ON	0	1=analyzers ON, 0 = analyzers OFF	%1d
6	Active_Filter	9	Valid filters are 1-8. If more than one filter is active at any one time, or if no filters are active, this field is set to zero.	%1d

7	Filter_Error	999	0=no filter error Otherwise, this field contains the decimal value of a byte composed of the status of each filter. Each filter is a bit (1=filter on, 0=filter off), and are organized such that position 0 (LSB) = filter 1, position 1 = filter 2, up to position 7 respectively.	%03d
8	Unused1	0	unused digital input	%1d
9	Unused2	0	unused digital input	%1d
10	Unused3	0	unused digital input	%1d
11	Unused4	0	unused digital input	%1d

File: af_<timecode>.<STN>, ff_<timecode>.<STN>
Return to File-Code

Col #	Name	Format and Missing Value Code (mvc)	Description	Scanf info
1	Station_ID	WSA	3-character ID code	%3s
2	Year	1993	Year	%4d
3	StartTime_UTC	012.12345	DOY and FRACTIONAL_DOY (January 1 = 1)	%09.5f
4	Empty String		Exists due to historical formatting	%s
5	Filter		Exists due to historical formatting	%s
6	Text		Exists due to historical formatting	%s
7	vol0_blank		volume of air/gas through the blank	
8	vol1		total volume of air/gas through filter1	
9	vol2		total volume of air/gas through filter2	
10	vol3		total volume of air/gas through filter3	
11	vol4		total volume of air/gas through filter4	
12	vol5		total volume of air/gas through filter5	
13	vol6		total volume of air/gas through filter6	
14	vol7		total volume of air/gas through filter7	
15	vol8_bypass		total volume of air/gas through the bypass line	

File: ageS<timecode>.<STN> Averaged data segments.
Return to File-Code

Col #	Name	Format and Missing Value Code (mvc)	Description	Scanf info.
1-24	same as ag_ file			
25	Segment ID	required field	Unique identifier for segment, YYYY_DDD_X_SITE_SEG, where YYYY=year, DDD=day of year, X=sequence label A..Z, SITE=location label, SEG=segment label	%s

File: ag_<timecode>.<STN>

Return to File-Code

Col #	Name	Format and Missing Value Code (mvc)	Description	Scanf info.
1	Station_ID	WSA	3-character ID code	%3s
2	Year	1993	Year	%4d
3	StartTime_UTC	012.12345	DOY and FRACTIONAL_DOY (January 1 = 1)	%09.5f
4	Flags	0011	4-character code representing system status.	%4s
5	CN_control	±9.999e-99	Aerosol number concentration (cm-3) measured with CNC on "control" inlet	%010.3e
6	CN_ambient	±9.999e-99	Aerosol number concentration (cm-3) measured with CNC on "ambient" inlet	%010.3e
7	Bap_G	±9.999e-99	Aerosol light absorption coefficient (m-1), green channel.	%010.3e
8	Bsp_B	±9.999e-99	Aerosol total light scattering coefficient (m-1), blue channel.	%010.3e
9	Bsp_G	±9.999e-99	Aerosol total light scattering coefficient (m-1), green channel.	%010.3e
10	Bsp_R	±9.999e-99	Aerosol total light scattering coefficient (m-1), red channel.	%010.3e
11	Bbsp_B -or- Bsp_NIR	±9.999e-99	Aerosol backwards-hemispheric light scattering coefficient (m-1), blue channel. For stations equipped with 4-wavelength nephelometers, this field is aerosol total light scattering coefficient (m-1), near infrared channel.	%010.3e
12	Bbsp_G	±9.999e-99	Aerosol backwards-hemispheric light scattering coefficient (m-1), green channel.	%010.3e
13	Bbsp_R	±9.999e-99	Aerosol backwards-hemispheric light scattering coefficient (m-1), red channel.	%010.3e
14	Neph_RH	±999	Relative Humidity (percent) inside nephelometer	%04d
15	Neph_T	±999.9	Temperature (K) inside nephelometer	%05.1f
16	Neph_P	±9999.9	Pressure (hPa) inside nephelometer	%07.1f
17	Ambient_T	±99.9	Ambient temperature (K)	%05.1f
18	Ambient_RH	±999	Ambient RH (%)	%04d
19	GPS_time_UTC	099.99999	DOY and FRACTIONAL_DOY (January 1 = 1)	%09.5f
20	Latitude	999.9999	Latitude, positive numbers are North	%08.4f
21	Longitude	9999.9999	Longitude, positive numbers are West	%09.4f
22	Altitude_m	9999.9	Altitude above mean sea level, meters	%06.1f
23	GndSpeed_m_s	999.9	Speed over ground, m/s	%05.1f
24	Course_true	999.9	True course over ground, degrees	%05.1f

File: am_<timecode>.<STN>

Return to File-Code

Col #	Name	Format and Missing Value Code (mvc)	Description	Scanf info
1	Station_ID	WSA	3-character ID code	%3s
2	Year	1993	Year	%4d
3	StartTime_UTC	012.12345	DOY and FRACTIONAL_DOY (January 1 = 1)	%09.5f

4	Q_filter_lpm	±99.99	Instantaneous air quantity through active filter (lpm)	%06.2f
5	Q_analyzer_lpm	±99.99	Instantaneous air quantity through analyzer (lpm)	%06.2f
6	Q_3_lpm	±99.99	Instantaneous air quantity through spare line	%06.2f
7	Q_4_lpm	±99.99	Instantaneous air quantity through spare line	%06.2f
8	Q_bypass_lpm	±99.99	Instantaneous air quantity through bypass line.	%06.2f
9	Q_CNdrier_lpm	±99.99	Instantaneous air quantity through CN drier line.	%06.2f
10	Q_CN_lpm	±99.99	Instantaneous air quantity through CN.	%06.2f
11	T_sample_degC	±99.9	Temperature of current air sample. (deg C)	%05.1f
12	T_stack_degC	±99.9	Temperature of air through stack. (deg C)	%05.1f
13	T_pumpbox_degC	±99.9	Temperature inside pumpbox. (deg C)	%05.1f
14	T_heater_deg C	±99.9	Temperature of heating tape. (deg C)	%05.1f
15	T_uMAC_degC	±99.9	Temperature measured at mMAC panel. (deg C)	%05.1f
16	dP_Pitot_hPa	±9.999	DPressure across stack. (hPa)	%06.3f
17	dP_Purge_hPa	±999.9	DPressure across purge line. (hPa)	%06.1f
18	dP_F1_hPa	±999.9	DPressure across filter 1. (hPa)	%06.1f
19	dP_F2_hPa	±999.9	DPressure across filter 2. (hPa)	%06.1f
20	dP_F3_hPa	±999.9	DPressure across filter 3. (hPa)	%06.1f
21	dP_F4_hPa	±999.9	DPressure across filter 4. (hPa)	%06.1f
22	dP_F5_hPa	±999.9	DPressure across filter 5. (hPa)	%06.1f
23	dP_F6_hPa	±999.9	DPressure across filter 6. (hPa)	%06.1f
24	dP_F7_hPa	±999.9	DPressure across filter 7. (hPa)	%06.1f
25	dP_F8_hPa	±999.9	DPressure across filter 8. (hPa)	%06.1f
26	V_uMAC_V	±9.999	Line voltage supplying power to mMAC. (volts)	%06.3f
27	RH_sample	±999.9	Relative humidity of sample	%06.1f
28	dP_neph_im_hPa	±999.9	DPressure across neph impactor valve (hPa)	%06.1f
29	dP_spare1	±999.9	DPressure spare1 (hPa)	%06.1f
30	dP_spare2	±999.9	DPressure spare2 (hPa)	%06.1f
31	T_rack	±99.9	Temperature inside the rack. (deg C)	%05.1f
32	P_station	±09999.9	station pressure (hPa)	%07.1f

File: at_<timecode>.<STN>

Return to File-Code

Col #	Name	Format and Missing Value Code (mvc)	Description	Scanf info
1	Station_ID	WSA	3-character ID code	%3s
2	Year	1993	Year	%4d
3	StartTime_UTC	012.12345	DOY and FRACTIONAL_DOY (January 1 = 1)	%09.5f
4	date			
5	time			
6..12	concentration	999999	BC concentration (ng/m3) [7 wavelength channels]	%07d
13	flow	±9.99	aethalometer flow rate	%05.2f

14	sz_1	99.9999	sample zero [7 wavelength channels]	%07d
15	sb_1	99.9999	sample zero [7 wavelength channels]	%07d
16	rz_1	99.9999	reference zero [7 wavelength channels]	%07d
17	rb_1	99.9999	reference beam [7 wavelength channels]	%07d
18	fraction_1	9.99	fraction of dilution	%05.3f
19	attenuation_1			
20..55	sz_2		repeat columns 14-19 for other 6 wavelength channels	

File: b__<timecode>.<STN>

Return to File-Code

Col #	Name	Format and Missing Value Code (mvc)	Description	Scanf info
1	Station_ID	WSA	3-character ID code	%3s
2	Year	1993	Year	%4d
3	StartTime_UTC	012.12345	DOY and FRACTIONAL_DOY (January 1 = 1)	%09.5f
4	AC_Volts_In	±999	AC Voltage supplying UPS	%04d
5	AC_Volts_Out	±999	AC Voltage UPS is supplying as output	%04d
6	AC_Amps_Out	±999.9	AC Amps UPS is currently supplying	%06.1f
7	Batt_DC_amp	±999.9	DC Amps of UPS Battery	%06.1f
8	Batt_DC_V	±999.9	DC Voltage of UPS Battery	%06.1f
9	Frequency	±999.9	Frequency of line supplying UPS power (Hz)	%06.1f
10	UPS_Temp	±999	Temperature inside UPS (deg C)	%04d

File: bm_<timecode>.<STN>

Return to File-Code

Col #	Name	Format and Missing Value Code (mvc)	Description	Scanf info
1	Station_ID	WSA	3-character ID code	%3s
2	Year	1993	Year	%4d
3	StartTime_UTC	012.12345	DOY and FRACTIONAL_DOY (January 1 = 1)	%09.5f
4	B_Monitor Last_UPS_ Report	(string of variable length)	String containing an event report generated by the UPS program. This string may contain embedded spaces.	%s

File: ca_<timecode>.<STN>

Return to File-Code

Col #	Name	Format and Missing Value Code (mvc)	Description	Scanf info
1	Station_ID	WSA	3-character ID code	%3s
2	Year	1993	Year	%4d

3	StartTime_UTC	012.12345	DOY and FRACTIONAL_DOY (January 1 = 1)	%09.5f
4	Flags			
5	Ncnc			

File: cm_<timecode>.<STN>

Return to File-Code

Col #	Name	Format and Missing Value Code (mvc)	Description	Scanf info
1	Station_ID	WSA	3-character ID code	%3s
2	Year	1993	Year	%4d
3	StartTime_UTC	012.12345	DOY and FRACTIONAL_DOY (January 1 = 1)	%09.5f
4	CNC_chan1_sec			
5	CNC_chan1_min			
6	Status			
7	T_condenser			
8	T_saturator			
9	Q_ccs			

File: da_<timecode>.<STN>

Return to File-Code

Col #	Name	Formatand Missing Value Code(mvc)	Description	Scanf info
1	Station_ID	WSA	3-character ID code	%3s
2	Year	1993	Year	%4d
3	StartTime_UTC	012.12345	FRACTIONAL_DOY (January 1 = 1)	%09.5f
4	ss_set	99.999	Sample supersaturation (percent), setpoint value reported by instrument	%06.3f
5	Temp_Unstable_flag	0	Hexadecimal flag, non-zero values indicate that instrument was not operating stably. Bit 0 (0x00) is set by instrument, based on the temperature difference between the setpoint temperature and the actual temperature. Bit 1 (0x02) is set by cpd, based on the standard deviation of the column temperature difference exceeding a threshold.	%01X
6	T_TEC1	999.99	Temperature (deg C) at top of column	%06.2f
7	T_TEC2	999.99	Temperature (deg C) at middle of column	%06.2f
8	T_TEC3	999.99	Temperature (deg C) bottom of column	%06.2f
9	T_sample	999.99	Temperature (deg C) of sample air entering the column	%06.2f
10	T_inlet	999.99	Temperature of sample air at entrance to instrument	%06.2f
11	T_OPC	999.99	Temperature of the optical particle counter	%06.2f

12	T_nafion	999.99	Temperature of the nafion humidifier	%06.2f
13	dT_TEC3_TEC1_StdDev	99.99	Standard deviation of the temperature difference (deg C) between the top and bottom of the column	%05.2f
14	Q_sample	999.99	Volumetric flowrate (ccm) of sample air	%06.2f
15	Q_sheath	999.99	Volumetric flowrate (ccm) of sheath air	%06.2f
16	P_sample	9999.99	Sample pressure (hPa)	%07.2f
17	Laser_Current	9999.99	OPC laser current (mA)	%07.2f
18	N_ccn	99999.99	Number concentration of CCN (cm^{-3})	%08.2f
19	Bin_Number_N_ccn	99	Bin number of lowest channel of OPC included in summation of N_ccn	%02d
20..40	dN_1 - dN 21	99999.9	number concentration in each OPC size bin	%07.1f

File: ds_<timecode>.<STN>

Return to File-Code

Col #	Name	Format and Missing Value Code (mvc)	Description	Scanf info
1	Station_ID	WSA	3-character ID code	%3s
2	Year	1993	Year	%4d
3	StartTime_UTC	012.12345	DOY and FRACTIONAL_DOY (January 1 = 1)	%09.5f
4	Q_Total_m3s	9.999e-99	Q_sample + Q_sheath (from da_)	%9.3e
5	Q_sh_aer_m3s	999.99	Q_sheath/Q_sample (from da_)	%06.2f
6	Press_pa	9.999e-99	P_sample (from da_)	%9.3e
7	T_inlet_K	999.99	T_inlet (from da_)	%06.2f
8	T_cold_K	999.99	T_TEC1 (from da_)	%06.2f
9	T_Hot_K	999.99	T_TEC3 (from da_)	%06.2f
10	N_ccn	99999.99	N_ccn (from da_)	%08.2f
11	dT_TEC3_TEC1 _stdDev	99.99	from da_	%05.2f
12	SS_calc	999.99	sample supersaturation (percent), from model calculation	%06.3f

File: fd_<timecode>.<STN>

Return to File-Code see ad_

File: ff_<timecode>.<STN>

Return to File-Code see af_

File: fm_<timecode>.<STN>

Return to File-Code

Col #	Name	Format and Missing Value Code (mvc)	Description	Scanf info

1	Station_ID	WSA	3-character ID code	%3s
2	Year	1993	Year	%4d
3	StartTime_UTC	012.12345	DOY and FRACTIONAL_DOY (January 1 = 1)	%09.5f
4	Q_filter_lpm	±99.99	Instantaneous air quantity through active filter (lpm)	%06.2f
5	T_sample_degC	±99.9	Temperature of current air sample. (deg C)	%05.1f
6	RH_sample	±999.9	Relative humidity of sample	%06.1f
7	dP_Pump_hPa	±999.9	DPressure across filter pump. (hPa)	%06.1f
8	dP_F1_hPa	±999.9	DPressure across filter 1. (hPa)	%06.1f
9	dP_F2_hPa	±999.9	DPressure across filter 2. (hPa)	%06.1f
10	dP_F3_hPa	±999.9	DPressure across filter 3. (hPa)	%06.1f
11	dP_F4_hPa	±999.9	DPressure across filter 4. (hPa)	%06.1f
12	dP_F5_hPa	±999.9	DPressure across filter 5. (hPa)	%06.1f
13	dP_F6_hPa	±999.9	DPressure across filter 6. (hPa)	%06.1f
14	dP_F7_hPa	±999.9	DPressure across filter 7. (hPa)	%06.1f
15	dP_F8_hPa	±999.9	DPressure across filter 8. (hPa)	%06.1f
16	dP_spare1	±999.9	DPressure spare1 (hPa)	%06.1f
17	dP_spare2	±999.9	DPressure spare2 (hPa)	%06.1f
18	dP_spare3	±999.9	DPressure spare3 (hPa)	%06.1f
19	T_rack_degC	±99.9	Temperature inside the rack. (deg C)	%05.1f
20	T_uMAC_degC	±99.9	Temperature measured at uMAC panel in filter rack. (deg C)	%05.1f
21	V_uMAC_V	±9.999	Line voltage supplying power to uMAC in filter rack. (volts)	%06.3f
22	CurrSampleID	±9	Number of current filter sample (1-8)	%1d

File: f "w" fb(or fg or fr)<HX>.<STN>

Return to File-Code

Col #	Name	Format and Missing Value Code (mvc)	Description	Scanf info
1	Station_ID	WSA	3-character ID code	%3s
2	Year	1993	Year	%4d
3	StartTime_UTC	012.12345	DOY and FRACTIONAL_DOY (January 1 = 1)	%09.5f
4	flags	0010	4-character code representing system status	%4s
5	f(RH) for 3 parameter fit	99.999	fitted value of f(RH) for 85/40 (3p fit)	%6.3f
6	chi^2 3 param fit	9.999e-99	goodness of fit parameter	%10.3e
7	min bsp	9.999e-99	minimum light scattering coefficient for file wavelength (m-1), reported at STP	%10.3e
8	min dry RH	999.9	minimum dry relative humidity (%) used in curve fit	%5.1
9	max dry RH	999.9	maximum dry relative humidity (%) used in curve fit	%5.1
10	min wet RH	999.9	minimum wet relative humidity (%) used in curve fit	%5.1
11	max wet RH	999.9	maximum wet relative humidity (%) used in curve fit	%5.1
12	p1	9.999e-99	3 param curvefit parameter #1	%10.3e

13	p2	9.999e-99	3 param curvefit parameter #2	%10.3e
14	p3	9.999e-99	3 param curvefit parameter #3	%10.3e
15	f(RH) for 2 parameter fit	99.999	fitted value of f(RH) for 85/40 (2p fit)	%6.3f
16	chi^2 2 param fit	9.999e-99	goodness of fit parameter	%10.3e
17	p1	9.999e-99	2 param curvefit parameter #1	%10.3e
18	p2	9.999e-99	2 param curvefit parameter #2	%10.3e
19	f(RH)	99.999	fitted value of f(RH) for 85/40 for bbsp	%6.3f
20	chi^2 2 param fitfo bbsp	9.999e-99	goodness of fit parameter	%10.3e
21	p1	9.999e-99	2 param curvefit parameter #1 for bbsp	%10.3e
22	p2	9.999e-99	2 param curvefit parameter #2 for bbsp	%10.3e

File: ft_<timecode>.<STN>

Return to File-Code

Col #	Name	Format and Missing Value Code (mvc)	Description	Scanf info
1	Station_ID	WSA	3-character ID code	%3s
2	EndYear	1993	End Year of sample period	%4d
3	EndTime_UTC	012.12345	DOY and FRACTIONAL_DOY (January 1 = 1) Endtime of sample period	%09.5f
4	StartYear	1993	Start Year of sample period	%4d
5	StartTime_UTC	012.12345	DOY and FRACTIONAL_DOY StartTime of sample period	%09.5f
6	Cum_sec	999999	Seconds elapsed during sampling period.	%6d
7	Filter	9	Filter that is being sampled this period	%1d

File: g__<timecode>.<STN>

Return to File-Code

Col #	Name	Format and Missing Value Code (mvc)	Description	Scanf info.
1	Station_ID	WSA	3-character ID code	%3s
2	Year	1993	Year	%4d
3	StartTime_UTC	012.12345	DOY and FRACTIONAL_DOY (January 1 = 1)	%09.5f
4	GPS_time_UTC	099.99999	DOY and FRACTIONAL_DOY (January 1 = 1)	%09.5f
5	Latitude	999.9999	Latitude, positive numbers are North	%08.4f
6	Longitude	9999.9999	Longitude, positive numbers are West	%09.4f
7	Altitude_m	9999.9	Altitude above mean sea level, meters	%06.1f
8	GndSpeed_m_s	999.9	Speed over ground, m/s	%05.1f
9	Course_true	999.9	True course over ground, degrees	%05.1f

File: h__<timecode>.<STN>

Return to File-Code

Col #	Name	Format and Missing Value Code (mvc)	Description	Scanf info
1	Station_ID	SGP	3-character ID code	%3s
2	Year	1993	Year	%4d
3	StartTime_UTC	012.12345	DOY and FRACTIONAL_DOY (January 1 = 1)	%09.5f
4	Flags	0011	4-character code representing system status	%4s
5	CN_control	99999.9	Aerosol number concentration (cm^{-3}) at ambient T&P, measured with CNC on "control" inlet.	%07.1f
6	CN_ambient	99999.9	Aerosol number concentration (cm^{-3}) at ambient T&P, measured with CNC on "ambient" inlet.	%07.1f
7	Bap_G	9999.99	Aerosol light absorption coefficient (Mm^{-1}), green channel.	%07.2f
8	RefBsp_B	9999.99	Aerosol total light scattering coefficient (Mm^{-1}), Ref. Neph. Blue channel	%07.2f
9	RefBsp_G	9999.99	Aerosol total light scattering coefficient (Mm^{-1}), Ref. Neph. Green channel	%07.2f
10	RefBsp_R	9999.99	Aerosol total light scattering coefficient (Mm^{-1}), Ref. Neph. red channel	%07.2f
11	RefBbsp_B	9999.99	Aerosol backwards-hemispheric light scattering coefficient (Mm^{-1}), Ref. Neph blue channel	%07.2f
12	RefBbsp_G	9999.99	Aerosol backwards-hemispheric light scattering coefficient (Mm^{-1}), Ref. Neph. green channel	%07.2f
13	RefBbsp_R	9999.99	Aerosol backwards-hemispheric light scattering coefficient (Mm^{-1}), Ref. Neph. red channel	%07.2f
14	WetBsp_B	9999.99	Aerosol total light scattering coefficient (Mm-1), Hum. Neph. Blue channel	%07.2f
15	WetBsp_G	9999.99	Aerosol total light scattering coefficient (Mm-1), Hum. Neph. Green channel	%07.2f
16	WetBsp_R	9999.99	Aerosol total light scattering coefficient (Mm-1), Hum. Neph. red channel	%07.2f
17	WetBbsp_B	9999.99	Aerosol backwards-hemispheric light scattering coefficient (Mm-1), Hum. Neph blue channel	%07.2f
18	WetBbsp_G	9999.99	Aerosol backwards-hemispheric light scattering coefficient (Mm-1), Hum. Neph. green channel	%07.2f
19	**WetBbsp_R**	**9999.99**	**Aerosol backwards-hemispheric light scattering coefficient (Mm-1), Hum. Neph. red channel**	**%07.2f**
20	RH_Inlet	999.9	Relative humidity (percent) at inlet	%05.1f
21	T_Inlet	999.9	Temperature (deg C) at inlet.	%05.1f
22	RH_reflnlet	999.9	Relative humidity (percent) at ref. nephelometer inlet	%05.1f
23	T_reflnlet	999.9	Temperature (deg C) at ref. nephelometer inlet.	%05.1f

24	RH_refNeph	999.9	Relative humidity (percent) inside ref. nephelometer.	%05.1f
25	T_refNeph	999.9	Temperature (deg C) inside ref. nephelometer.	%05.1f
26	RH_S1	999.9	Relative humidity (percent) of humido. preheater.	%05.1f
27	T_S1	999.9	Temperature (deg C) of humido. preheater.	%05.1f
28	RH_S2	999.9	Relative humidity (percent) of humido. controller.	%05.1f
29	T_S2	999.9	Temperature (deg C) of humido. controller.	%05.1f
30	RH_wetInlet	999.9	Relative humidity (percent) at wet nephelometer inlet.	%05.1f
31	T_wetInlet	999.9	Temperature (deg C) at wet nephelometer inlet.	%05.1f
32	RH_wetNeph	999.9	Relative humidity (percent) inside of wet nephelometer.	%05.1f
33	T_wetNeph	999.9	Temperature (deg C) inside of wet nephelometer.	%05.1f
34	RH_Ambient	999.9	Relative humidity (percent) in ambient air	%05.1f
35	T_Ambient	999.9	Temperature (deg C) in ambient air	%05.1f
36	P_ambient	9999.9	Ambient pressure (hPa)	%06.1f
37	P_refNeph	9999.9	Pressure inside reference nephelometer (hPa)	%06.1f
38	P_wetNeph	9999.9	Pressure inside wet nephelometer (hPa)	%06.1f
39	W_S	99.9	Wind speed (m/s)	%04.1f
40	W_D	999	Wind direction (deg true)	%03d
41	Bap_B_3W	9999.99	Aerosol light absorption coefficient (Mm^{-1}), blue channel.	%07.2f
42	Bap_G_3W	9999.99	Aerosol light absorption coefficient (Mm^{-1}), green channel.	%07.2f
43	Bap_R_3W	9999.99	Aerosol light absorption coefficient (Mm^{-1}), red channel.	%07.2f

File: hge<timecode>.<STN>

Return to File-Code

Col #	Name	Format and Missing Value Code (mvc)	Description	Scanf info
1	Station_ID	IAP	3-character ID code	%3s
2	Year	1993	Year	%4d
3	StartTime_UTC	012.12345	DOY and FRACTIONAL_DOY (January 1 = 1)	%09.5f
4	Flags	0011	4-character code representing system status	%4s
5	CN_control	99999.9	Aerosol number concentration (cm^{-3}) at ambient T&P, measured with CNC on "control" inlet.	%07.1f
6	CN_ambient	99999.9	Aerosol number concentration (cm^{-3}) at ambient T&P, measured with CNC on "ambient" inlet.	%07.1f
7	Bap_G	9999.99	Aerosol light absorption coefficient (Mm^{-1}), green channel.	%07.2f
8	RefBsp_B	9999.99	Aerosol total light scattering coefficient (Mm^{-1}), Ref. Neph. Blue channel	%07.2f
9	RefBsp_G	9999.99	Aerosol total light scattering coefficient (Mm^{-1}), Ref. Neph. Green channel	%07.2f
10	RefBsp_R	9999.99	Aerosol total light scattering coefficient (Mm^{-1}), Ref. Neph. red channel	%07.2f

11	RefBbsp_B	9999.99	Aerosol backwards-hemispheric light scattering coefficient (Mm^{-1}), Ref. Neph blue channel	%07.2f
12	RefBbsp_G	9999.99	Aerosol backwards-hemispheric light scattering coefficient (Mm^{-1}), Ref. Neph. green channel	%07.2f
13	RefBbsp_R	9999.99	Aerosol backwards-hemispheric light scattering coefficient (Mm^{-1}), Ref. Neph. red channel	%07.2f
14	WetBsp_B	9999.99	Aerosol total light scattering coefficient (Mm-1), Hum. Neph. Blue channel	%07.2f
15	WetBsp_G	9999.99	Aerosol total light scattering coefficient (Mm-1), Hum. Neph. Green channel	%07.2f
16	WetBsp_R	9999.99	Aerosol total light scattering coefficient (Mm-1), Hum. Neph. red channel	%07.2f
17	WetBbsp_B	9999.99	Aerosol backwards-hemispheric light scattering coefficient (Mm-1), Hum. Neph blue channel	%07.2f
18	WetBbsp_G	9999.99	Aerosol backwards-hemispheric light scattering coefficient (Mm-1), Hum. Neph. green channel	%07.2f
19	WetBbsp_R	9999.99	Aerosol backwards-hemispheric light scattering coefficient (Mm-1), Hum. Neph. red channel	%07.2f
20	RH_Inlet	999.9	Relative humidity (percent) at inlet	%05.1f
21	T_Inlet	999.9	Temperature (deg C) at inlet.	%05.1f
22	RH_refInlet	999.9	Relative humidity (percent) at ref. nephelometer inlet	%05.1f
23	T_refInlet	999.9	Temperature (deg C) at ref. nephelometer inlet.	%05.1f
24	RH_refNeph	999.9	Relative humidity (percent) inside ref. nephelometer.	%05.1f
25	T_refNeph	999.9	Temperature (deg C) inside ref. nephelometer.	%05.1f
26	RH_S1	999.9	Relative humidity (percent) of humido. preheater.	%05.1f
27	T_S1	999.9	Temperature (deg C) of humido. preheater.	%05.1f
28	RH_S2	999.9	Relative humidity (percent) of humido. controller.	%05.1f
29	T_S2	999.9	Temperature (deg C) of humido. controller.	%05.1f
30	RH_wetInlet	999.9	Relative humidity (percent) at wet nephelometer inlet.	%05.1f
31	T_wetInlet	999.9	Temperature (deg C) at wet nephelometer inlet.	%05.1f
32	RH_wetNeph	999.9	Relative humidity (percent) inside of wet nephelometer.	%05.1f
33	T_wetNeph	999.9	Temperature (deg C) inside of wet nephelometer.	%05.1f
34	RH_Ambient	999.9	Relative humidity (percent) in ambient air	%05.1f
35	T_Ambient	999.9	Temperature (deg C) in ambient air	%05.1f
36	P_ambient	9999.9	Ambient pressure (hPa)	%06.1f
37	P_refNeph	9999.9	Pressure inside reference nephelometer (hPa)	%06.1f
38	P_wetNeph	9999.9	Pressure inside wet nephelometer (hPa)	%06.1f
39	W_S	99.9	Wind speed (m/s)	%04.1f
40	W_D	999	Wind direction (deg true)	%03d
41	GPS_time_UTC	999.99999	GPS time.	%09.5f
42	Latitude, positive numbers are North	999.9999	Latitude	%08.4f
43	Longitude	9999.9999	Longitude, positive numbers are West	%09.4f
44	Altitude_m	9999.9	Altitude (m asl)	%06.1f
45	Gnd_Speed_m_s	999.9	Speed over ground (m/s)	%05.1f

46	Course_true	999.9	True course over ground (degrees)	%05.1f

File: hgeS<timecode>.<STN>

Return to File-Code

Col #	Name	Format and Missing Value Code (mvc)	Description	Scanf info
1-46	Same as hge	same as hge	Same as hge	same as hge
47	Flight_Seg_Id	required field	Unique identifier for segment, YYYY_DDD_X_SITE_SEG, where YYYY=year, DDD=day of year, X=sequence label A..Z, SITE=location label, SEG=segment label (1000s feet)	%s

File: hm_<timecode>.<STN>

Return to File-Code

Setpoint channel values. Written on a setpoint change (may be scheduled or the result of operator intervention). The humidigraph system is essentially a heater and a water pump. So a setpoint channel will change when the heater goes to the next temperature, or the water pump is primed (for example). The steps are configured in the ini file that a certain number of seconds per hour the temperature are set to a particular value.

Col #	Name	Format and Missing Value Code (mvc)	Description	Scanf info
1	Station_ID	WSA	3-character ID code	%3s
2	Year	1993	Year	%4d
3	StartTime_UTC	012.12345	DOY and FRACTIONAL_DOY (January 1 = 1)	%09.5f
4	Chan_A			
5	Chan_B			
7	Chan_C			
8	Chan_D			

File: k__<timecode>.<STN>; raw aethalometer data

Return to File-Code

Col #	Name	Format and Missing Value Code (mvc)	Description	Scanf info
1	Station_ID	WSA	3-character ID code	%3s
2	Year	1993	Year	%4d
3	StartTime_UTC	012.12345	DOY and FRACTIONAL_DOY (January 1 = 1)	%09.5f
4	flow_slpm	±9.99	aethalometer flow rate	%05.2f
5	fraction	9.99	fraction of dilution	%05.3f
6..12	concentration	999999	BC concentration (ng/m3) [7 wavelength channels]	%07d

13..19	atn	999.999	attenuation [7 wavelength channels]	%07d
20..26	sz	99.9999	sample zero [7 wavelength channels]	%07d
27..33	sb	99.9999	sample beam [7 wavelength channels]	%07d
34..40	rz	99.9999	reference zero [7 wavelength channels]	%07d
41..47	rb	99.9999	reference beam [7 wavelength channels]	%07d

File: la_<timecode>.<STN>

Return to File-Code

Col #	Name	Format and Missing Value Code (mvc)	Description	Scanf info
1	Station_ID	WSA	3-character ID code	%3s
2	Year	1993	Year	%4d
3	StartTime_UTC	012.12345	DOY and FRACTIONAL_DOY (January 1 = 1)	%09.5f
4	Flags	0010	4-character code representing system status	%4s
5	BapB	9999.99		%07.2f
6	BapG	9999.99		%07.2f
7	BapR	9999.99		%07.2f
8	TrB	9.999		%05.3f
9	TrG	9.999		%05.3f
10	TrR	9.999		%05.3f

*Note lae files are generated when edits and corrections are applied to la_ files.

File: nbN_eS<timecode>.<STN>

Return to File-Code

Col #	Name	Format and Missing Value Code (mvc)	Description	Scanf info
1-10	Same as lae	same as lae	Same as lae	same as lae
11	Flight_Seg_Id	required field	Unique identifier for segment, YYYY_DDD_X_SITE_SEG, where YYYY=year, DDD=day of year, X=sequence label A..Z, SITE=location label, SEG=segment label (1000s feet)	%s

File: lm_<timecode>.<STN>

Return to File-Code

Col #	Name	Format and Missing Value Code (mvc)	Description	Scanf info

1	Station_ID	WSA	3-character ID code	%3s
2	Year	1993	Year	%4d
3	StartTime_UTC	012.12345	DOY and FRACTIONAL_DOY (January 1 = 1)	%09.5f
4	Q_clap_slpm	±9.99	CLAP flow rate	%05.2f
5	TrG	9.999	Transmittance -- green	%05.3f
6	I_sampleG	9999999	Sample Intensity-- green	%07d
7	I_refG	9999999	Reference Intensity-- green	%07d
8	I_sam_rsd_ppmG		-- green	%07d
9	I_ref_rsd_ppmG		-- green	%07d

If the lm_ file comes from a CLAP or 1WPSAP the lm_ files end with column 9.
If the lm_ files comes from a 3WPSAP the following 10 columns are included.

10	TrB	9.999	Transmittance -- blue	%05.3f
11	I_sampleB	9999999	Sample Intensity -- blue	%07d
12	I_refb	9999999	Reference Intensity -- blue	%07d
13	I_sam_rsd_ppmB		-- blue	%07d
14	I_ref_rsd_ppmB		-- blue	%07d
15	TrR	9.999	Transmittance -- red	%05.3f
16	I_sampleR	9999999	Sample Intensity -- red	%07d
17	I_refR	9999999	Reference Intensity -- red	%07d
18	I_sam_rsd_ppmR		-- red	%07d
19	I_ref_rsd_ppmR		-- red	%07d

File: lw_<timecode>.<STN>
Return to File-Code Note:high frequency data files may only have first 19 fields.

Col #	Name	Format and Missing Value Code (mvc)	Description	Scanf info
1	Station_ID	WSA	3-character ID code	%3s
2	Year	1993	Year	%4d
3	StartTime_UTC	012.12345	DOY and FRACTIONAL_DOY (January 1 = 1)	%09.5f
4	Flags	0011	4-character code representing system status	%4s
5	Bap_B	9999.99	Aerosol light absorption coefficient (Mm^{-1}), blue channel.	%07.2f
6	Bap_G	9999.99	Aerosol light absorption coefficient (Mm^{-1}), green channel.	%07.2f
7	Bap_R	9999.99	Aerosol light absorption coefficient (Mm^{-1}), red channel.	%07.2f
8	RefBsp_B	9999.99	Aerosol total light scattering coefficient (Mm^{-1}), Ref. Neph. Blue channel	%07.2f
9	RefBsp_G	9999.99	Aerosol total light scattering coefficient (Mm^{-1}), Ref. Neph. Green channel	%07.2f

10	RefBsp_R	9999.99	Aerosol total light scattering coefficient (Mm^{-1}), Ref. Neph. Red channel	%07.2f
11	RH_refNeph	999.9	Relative humidity (percent) inside ref. nephelometer.	%05.1f
12	T_refNeph	999.9	Temperature (deg C) inside ref. nephelometer.	%05.1f
13	P_refNeph	9999.9	Pressure inside reference nephelometer (hPa)	%6.1f
14	TrB	9.999	Transmittance blue	%05.3f
15	TrG	9.999	Transmittance green	%05.3f
16	TrR	9.999	Transmittance red	%05.3f
17	Q_clap_slpm	±9.999	CLAP flow rate	%05.3f
18	RH_psap	999.9	Relative humidity (percent) inside PSAP	%05.1f
19	T_psap	999.9	Temperature (deg C) inside PSAP	%05.1f
20	I_sampleB	9999999	Sample Intensity blue	%07d
21	I_sampleG	9999999	Sample Intensity green	%07d
22	I_sampleR	9999999	Sample Intensity red	%07d
23	I_refB	9999999	Reference Intensity blue	%07d
24	I_refG	9999999	Reference Intensity green	%07d
25	I_refR	9999999	Reference Intensity red	%07d
26	I_ref_rsdB	9999999	Ref. Int. rsd blue	%07d
27	I_ref_rsdG	9999999	Ref. Int. rsd green	%07d
28	I_ref_rsdR	9999999	Ref. Int. rsd red	%07d
29	I_sam_rsdB	9999999	Samp. Int. rsd blue	%07d
30	I_sam_rsdG	9999999	Samp. Int. rsd green	%07d
31	I_sam_rsdR	9999999	Samp. Int. rsd red	%07d

File: m__<timecode>.<STN>

Return to File-Code

Col #	Name	Format and Missing Value Code (mvc)	Description	Scanf info
1	Station_ID	WSA	3-character ID code	%3s
2	Year	1993	Year	%4d
3	StartTime_UTC	012.12345	DOY and FRACTIONAL_DOY (January 1 = 1)	%09.5f
4	M_Monitor	(string of variable length)	General system monitor notes and records. This string may contain embedded spaces and/or commas.	%s

File: me_<timecode>.<STN>

Return to File-Code

Col #	Name	Format and Missing Value Code (mvc)	Description	Scanf info

1	Station_ID	WSA	3-character ID code.	%3s
2	Year	1993	Year	%4d
3	StartTime_UTC	012.12345	DOY and FRACTIONAL_DOY (January 1 = 1)	%09.5f
4	T_ambient	±99.9	local temperature (deg C)	%5.1f
5	RH_ambient	±999.9	local relative humidity (%)	%6.1f
6	P_ambient	±9999.9	local pressure (hPa)	%7.1f
7	WS	±99.9	local wind speed (m s-1)	%5.1f
8	WD	±999	local wind direction (degrees True)	%4d
9	Visibility	±999.9	local visibility (km)	%6.1f
10	Weather	99	2-digit code for current weather, "TI" value Type Intensity 0 none -- 1 unknown very light 2 drizzle light 3 rain moderate 4 snow heavy 5 hail very heavy 6 freezing unknown 7 freezing drizzle 8 freezing rain	%2d
11	Cloud_base_m	9999	height of lowest layer of cloud, in meters above ground level	%4d
12	Opacity_layer1	99	opacity of lowest layer of cloud, in 10th's	%2d
13	Opacity_total	99	opacity of total cloud cover, in 10th's	%2d
14	Fog1	999	frequency of fog with LWC>0.05 g/m3 (%)	%3d
15	Fog2	999	frequency of fog with LWC>0.15 g/m3 (%)	%3d
16	Solar_flux	9999	broadband solar irradiance, W/m2	%4d

File: na_<timecode>.<STN>

Return to File-Code

Col #	Name	Format and Missing Value Code (mvc)	Description	Scanf info
1	Station_ID	WSA	3-character ID code	%3s
2	Year	1993	Year	%4d
3	StartTime_UTC	012.12345	DOY and FRACTIONAL_DOY (January 1 = 1)	%09.5f
4	Flags	0010	4-character code representing system status	%4s
5	BspB	9999.99	Aerosol total light scattering coefficient (Mm^{-1}), Neph. Blue channel	%07.2f
6	BspG	9999.99	Aerosol total light scattering coefficient (Mm^{-1}), Neph. Green channel	%07.2f
7	BspR	9999.99	Aerosol total light scattering coefficient (Mm^{-1}), Neph. red channel	%07.2f
8	BbspB	9999.99	Aerosol backwards-hemispheric light scattering coefficient (Mm^{-1}), Neph blue channel	%07.2f

9	BbspG	9999.99	Aerosol backwards-hemispheric light scattering coefficient (Mm^{-1}), Neph. green channel	%07.2f
10	BbspR	9999.99	Aerosol backwards-hemispheric light scattering coefficient (Mm^{-1}), Neph. red channel	%07.2f
11	T_inlet	999.9	Temperature (deg C) at ref. nephelometer inlet.	%05.1f
12	RH_neph	999.9	Relative humidity (percent) at ref. nephelometer inlet	%05.1f
13	T_neph	999.9	Temperature (deg C) inside ref. nephelometer.	%05.1f
14	P_neph	999.9	Pressure inside ref. nephelometer. (hPa)	%05.1f

File: nb_<timecode>.<STN>

Return to File-Code

The nb_ file format is identical to the na_ format. It stores data that has undergone zero-correction (generated by cnvtnb_).

nbN_e files are nb_ files with edits and standard correctiions applied to them

nbN_eS files are nbN_e files with segment averages appended to them

File: nc_<timecode>.<STN>

Return to File-Code

Col #	Name	Format and Missing Value Code (mvc)	Description	Scanf info
1	Station_ID	WSA	3-character ID code	%3s
2	Year	1993	Year	%4d
3	EndTime_UTC	012.12345	DOY and FRACTIONAL_DOY (January 1 = 1) of the end of the calibration.	%09.5f
4	Bsp_B_bkg	±9.999e-99	Background blue (m-1)	%10.3e
5	Bsp_G_bkg	±9.999e-99	Background green (m-1)	%10.3e
6	Bsp_R_bkg	±9.999e-99	Background red (m-1)	%10.3e
7	Bbsp_B_bkg	±9.999e-99	Backscatter Background blue (m-1)	%10.3e
8	Bbsp_G_bkg	±9.999e-99	Backscatter Background green (m-1)	%10.3e
9	Bbsp_R_bkg	±9.999e-99	Backscatter Background red (m-1)	%10.3e

File: ne_<timecode>.<STN>

Return to File-Code

Col #	Name	Format and Missing Value Code (mvc)	Description	Scanf info
1	Station_ID	WSA	3-character ID code	%3s
2	Year	1993	Year	%4d
3	StartTime_UTC	012.12345	DOY and FRACTIONAL_DOY (January 1 = 1)	%09.5f
4	Mode	9999	Code representing nephelometer system state	%4s
5	Flags	not applicable	nephelometer status (4 digits on TSI nephelometers)	%4s

File: nk_<timecode>.<STN>

Return to File-Code

The nk_ file consists of a series of data reports resulting from a nephelometer span check. The span check is our in-field method for checking nephelometer calibration. Each of the 6 types of reports is described below along with tabular representation of the report contents.

File: nz_<timecode>.<STN>

Return to File-Code

The nz_ file format is identical to the na_ format. It stores zero data fields generated by cnvtnz_.

1 - SC_den{GAS}

These reports are named: SC_denAIR and SC_denCO2. These give the average T/P/RH during the AIR and CO2 measurement periods, as well as the average density ratio and lamp power. The density ratio is the air density in the sample volume divided by the air density at STP (273.15 K, 1013.25 hPA).

Col #	Name	Format and Missing Value Code (mvc)	Description	Scanf info
1	Station_ID	WSA	3-character ID code	%3s
2	Year	1993	Year	%4d
3	StartTime_UTC	012.12345	DOY and FRACTIONAL_DOY (January 1 = 1)	%09.5f
4	report title	n/a	SC_den{GAS}	%9s
5	Press_hPa	9999.99	neph pressure (hPa)	%07.2f
6	Temp_K	999.99	neph temperature (K)	%06.2f
7	RH	999.9	neph relative humidity	%05.1f
8	Den	99.99999	Gas density ratio	%08.5f
9	Power	999.9	Neph lamp power (W)	%05.1f

2 - SC_Hz{chopper phase}

These reports are named: SC_HzCAL, SC_HzDark, SC_HzAIR, and SC_HzCO2. These give the average photon count frequencies of during the different phases of the chopper rotation: Calibrator, Dark, Sample_AIR, and Sample_CO2.

Col #	Name	Format and mvc	Description	Scanf info
1	Station_ID	WSA	3-character ID code	%3s
2	Year	1993	Year	%4d
3	StartTime_UTC	012.12345	DOY and FRACTIONAL_DOY (January 1 = 1)	%09.5f
4	report title	n/a	SC_Hz{chopper phase}	%9s
5	{Phase}_TS_B	99.999e-99	total scatter blue for {chopper phase}	%010.3e
6	{Phase}_TS_G	99.999e-99	total scatter green for {chopper phase}	%010.3e
7	{Phase}_TS_R	99.999e-99	total scatter red for {chopper phase}	%010.3e
8	{Phase}_BS_B	99.999e-99	backscatter blue for {chopper phase}	%010.3e
9	{Phase}_BS_G	99.999e-99	backscatter green for {chopper phase}	%010.3e
10	{Phase}_BS_R	99.999e-99	backscatter red for {chopper phase}	%010.3e

3 - SC_sAirHz

This gives the sensitivity of the instrument to filtered air at STP. It is the the increase in the photon count frequency when the instrument is filled with air at STP, compared to the hypothetical value when the instrument is evacuated.

Col #	Name	Format and Missing Value Code (mvc)	Description	Scanf info
1	Station_ID	WSA	3-character ID code	%3s
2	Year	1993	Year	%4d
3	StartTime_UTC	012.12345	DOY and FRACTIONAL_DOY (January 1 = 1)	%09.5f
4	report title	n/a	SC_sAirHz	%9s
5	sAir_TS_B	99.999e-99	Sensitivity of total scatter blue	%010.3e
6	sAir_TS_G	99.999e-99	Sensitivity of total scatter green	%010.3e
7	sAir_TS_R	99.999e-99	Sensitivity of total scatter red	%010.3e
8	sAir_BS_B	99.999e-99	Sensitivity of back scatter blue	%010.3e
9	sAir_BS_G	99.999e-99	Sensitivity of back scatter green	%010.3e
10	sAir_BS_R	99.999e-99	Sensitivity of back scatter red	%010.3e

4 - SC_Bsp{GAS}

These are the measured average scattering coefficients (Rayleigh-subtracted) reported by the neph during the AIR and CO2 measurement periods. They are at the T/P/RH reported in the denAIR and denCO2 records.

Col #	Name	Format and Missing Value Code (mvc)	Description	Scanf info
1	Station_ID	WSA	3-character ID code	%3s
2	Year	1993	Year	%4d
3	StartTime_UTC	012.12345	DOY and FRACTIONAL_DOY (January 1 = 1)	%09.5f
4	report title	n/a	SC_Bsp{GAS}	%8s
5	Bsp{GAS}_B	99.999e-99	Sensitivity of total scatter blue	%010.3e
6	Bsp{GAS}_G	99.999e-99	Sensitivity of total scatter green	%010.3e
7	Bsp{GAS}_R	99.999e-99	Sensitivity of total scatter red	%010.3e
8	Bbsp{GAS}_B	99.999e-99	Sensitivity of back scatter blue	%010.3e
9	Bbsp{GAS}_G	99.999e-99	Sensitivity of back scatter green	%010.3e
10	Bbsp{GAS}_R	99.999e-99	Sensitivity of back scatter red	%010.3e

5 - SC_BsgCO2

This is the measured Rayleigh scattering coefficient of CO2, adjusted to STP.

Col #	Name	Format and Missing Value	Description	Scanf info

		Code (mvc)		
1	Station_ID	WSA	3-character ID code	%3s
2	Year	1993	Year	%4d
3	StartTime_UTC	012.12345	DOY and FRACTIONAL_DOY (January 1 = 1)	%09.5f
4	report title	n/a	SC_BsgCO2	%9s
5	BsgCO2_B	99.999e-99	Measured Rayleigh total scatter blue	%010.3e
6	BsgCO2_G	99.999e-99	Measured Rayleigh total scatter green	%010.3e
7	BsgCO2_R	99.999e-99	Measured Rayleigh total scatter red	%010.3e
8	BbsgCO2_B	99.999e-99	Measured Rayleigh back scatter blue	%010.3e
9	BbsgCO2_G	99.999e-99	Measured Rayleigh back scatter green	%010.3e
10	BbsgCO2_R	99.999e-99	Measured Rayleigh back scatter red	%010.3e

6 - SC_PctErr

This is the percentage error between the measured Rayleigh scattering coefficient of CO2 and the literature values.

Col #	Name	Format and Missing Value Code (mvc)	Description	Scanf info
1	Station_ID	WSA	3-character ID code	%3s
2	Year	1993	Year	%4d
3	StartTime_UTC	012.12345	DOY and FRACTIONAL_DOY (January 1 = 1)	%09.5f
4	report title	n/a	SC_PctErr	%9s
5	Err_TS_B	99.999e-99	Percent error total scatter blue	%010.3e
6	Err_TS_G	99.999e-99	Percent error total scatter green	%010.3e
7	Err_TS_R	99.999e-99	Percent error total scatter red	%010.3e
8	Err_BS_B	99.999e-99	Percent error back scatter blue	%010.3e
9	Err_BS_G	99.999e-99	Percent error back scatter green	%010.3e
10	Err_BS_R	99.999e-99	Percent error back scatter red	%010.3e

File: nm_<timecode>.<STN>

Return to File-Code

Col #	Name	Format and Missing Value Code (mvc)	Description	Scanf info
1	Station_ID	WSA	3-character ID code	%3s
2	Year	1993	Year	%4d
3	StartTime_UTC	012.12345	DOY and FRACTIONAL_DOY (January 1 = 1)	%09.5f
4	Press_hPa	±9999.9	Pressure inside nephelometer. (hPa)	%07.1f
5	Temp_K	±999.9	Temperature inside nephelometer (K)	%06.1f
6	Ref_green	±9.999e-99	Nephelometer Green Reference (Hz)	%010.3e

7	Lamp_neph_V	±9.999e-99	Voltage supplying nephelometer lamp (V)	%010.3e
8	Lamp_I_A	±9.9	Current supplying nephelometer lamp (A)	%04.1f
9	Neph_RH	±999.9	Relative Humidity (%) inside neph	%06.1f
10	T_inlet	±999.9	Temperature of inlet air (K)	%06.1f
11	Aux_BNC_in	9999	BNC Auxiliary input (mV)	%04d

...before format v2.0, these fields are:

8	Bkg_blue_1_m	±9.999e-99	Background blue (m-1)	%010.3e
9	Bkg_green_1_m	±9.99e9-99	Background green (m-1)	%010.3e
10	Bkg_red_1_m	±9.99e9-99	Background red (m-1)	%010.3e

File: ns_<timecode>.<STN>
Return to File-Code
*[same format as **ne_<timecode>.<STN>**]*
File: oc_<timecode>.<STN>
Return to File-Code
*[same format as **nc_<timecode>.<STN>, but for second nephelometer**]*
File: om_<timecode>.<STN>
Return to File-Code
*[same format as **nm_<timecode>.<STN>, but for second nephelometer**]*
File: os_<timecode>.<STN>
Return to File-Code
*[same format as **ns_<timecode>.<STN>, but for second nephelometer**]*
File: p__<timecode>.<STN>
Return to File-Code

Col #	Name	Format and Missing Value Code (mvc)	Description	Scanf info
1	Station_ID	WSA	3-character ID code	%3s
2	Year	1993	Year	%4d
3	StartTime_UTC	012.12345	DOY and FRACTIONAL_DOY (January 1 = 1)	%09.5f
4	Vis_alarm		Visibility Alarm	
5	HW_Alarm		Hardware Alarm	
6	Vis_1min		visibility 10 minute average max 20000m	
7	Vis_10min		visibility 1 minute average max 20000m	
8	NWS_Code		Instant present weather	%3s
9	PWC_Instant		Instant present weather code, 0 ... 99	
10	PWC_15min		15 min present weather code, 0 ... 99	
11	PWC_Hour		hour present weather code, 0 ... 99	
12	Water_Intensity		Water Intensity 1 min average mm/h	
13	Cum_Water		Cumulative water sum, 0 ... 99.99 mm	
14	Cum_Snow		Cumulative snow sum, 0 ... 999 mm	

File: pm_<timecode>.<STN>

Return to File-Code

Written at the monitor interval (usually 15 minutes). Contains instantaneous values for a given control (the address of which is the first field). Written once for each control on the chain.

Col #	Name	Format and Missing Value Code (mvc)	Description	Scanf info
1	Station_ID	WSA	3-character ID code	%3s
2	Year	1993	Year	%4d
3	StartTime_UTC	012.12345	DOY and FRACTIONAL_DOY (January 1 = 1)	%09.5f
4	Addr			
5	PV			
6	SP1			
7	SP2			
8	Status			

File: si_<timecode>.<STN>

more info...

Return to File-Code

Col #	Name	Format and Missing Value Code (mvc)	Description	Scanf info
1	Station_ID	WSA	3-character ID code	%3s
2	Year	1993	Year	%4d
3	StartTime_UTC	012.12345	DOY and FRACTIONAL_DOY (January 1 = 1)	%09.5f
4	flags	0010	4-character code representing system status	%4s
5	Wavelength	±550	wavelength for calculated and measured scattering (nm)	%4.1f
6	RefIndR_sub	±1.50	real part of refractive index for sub-um	%5.3f
7	RefIndR_tot	±1.50	real part of refractive index for sub-10um	%5.3f
8	RefIndI_sub	±0.005	imag. part of refractive index for sub-um	%5.3f
9	RefIndI_tot	±0.005	imag. part of refractive index for sub-10um	%5.3f
10	RefBsp_G	±9999.99	measured scattering at 550 nm (Mm^{-1})	%7.2f
11	nt1	±99999.9	calculated number concentration for sub-um (cm^{-3})	%7.1f
12	nt10	±99999.9	calculated number concentration for sub-10um (cm^{-3})	%7.1f
13	dg1	±99.999	calculated geometric mean diameter for sub-um (um)	%6.3f
14	dg10	±99.999	calculated geometric mean diameter for sub-10um (um)	%6.3f
15	vt1	±99999.9	calculated volume for sub-um (cm^{-3})	%7.1f
16	vt10	±99999.9	calculated volume for sub-10um (cm^{-3})	%7.1f
17	dgV1	±99.999	calculated volume diameter for sub-um (um)	%6.3f
18	dgV10	±99.999	calculated volume diameter for sub-10um (um)	%6.3f
19	bsp1	±9999.99	calculated scattering for sub-um (Mm^{-1})	%7.2f

20	bsp10	±9999.99	calculated scattering for sub-10um (Mm^{-1})	%7.2f
21	bap1	±9999.99	calculated absorption for sub-um (Mm^{-1})	%7.2f
22	bap10	±9999.99	calculated absorption for sub-10um (Mm^{-1})	%7.2f
23	angRB	±99.99	Angstrom exponent for red-blue neph data	%5.2f

File: sm_<timecode>.<STN>

Return to File-Code

Col #	Name	Format and Missing Value Code (mvc)	Description	Scanf info
1	Station_ID	WSA	3-character ID code	%3s
2	Year	1993	Year	%4d
3	StartTime_UTC	012.12345	DOY and FRACTIONAL_DOY (January 1 = 1)	%09.5f
4	Event_Type	(string)	event from scheduled tasks	%s

File: sr_<timecode>.<STN>

Return to File-Code

Col #	Name	Format and Missing Value Code (mvc)	Description	Scanf info
1	Station_ID	WSA	3-character ID code	%3s
2	Year	1993	Year	%4d
3	StartTime_UTC	012.12345	DOY and FRACTIONAL_DOY (January 1 = 1)	%09.5f
4	flags	0010	4-character code representing system status	%4s
5	ZeroAir	±99.9	Zero air flow (lpm)	%5.1f
6	SampInt	±999.9	Sample interval (s)	%5.1f
7	Activity	±99.99	Activity (%)	%5.2f
8	Ref_V	±9.99	Laser reference voltage (V)	%5.2f
9	SampFlow	±9.999	Sample flow (lpm)	%6.3f
10	SheathFlow	±9.999	Sheath air flow (lpm)	%6.3f
11-42	N(i)	±99999.9	Number of particles in bin(i)	%7.1f

File: ss_<timecode>.<STN>

Return to File-Code

Col #	Name	Format and Missing Value Code (mvc)	Description	Scanf info
1	Station_ID	WSA	3-character ID code	%3s
2	Year	1993	Year	%4d
3	StartTime_UTC	012.12345	DOY and FRACTIONAL_DOY (January 1 = 1)	%09.5f
4	seconds	±999	Elapsed seconds this sampling period	%04d

5	samples	±999	Number of samples taken this sampling period	%04d

File: ua_<timecode>.<STN> and **um_ <timecode>.<STN>**

Return to File-Code

Col #	Name	Format and Missing Value Code (mvc)	Description	Scanf info
1	Station_ID	WSA	3-character ID code	%3s
2	Year	1993	Year	%4d
3	StartTime_UTC	012.12345	DOY and FRACTIONAL_DOY (January 1 = 1)	%09.5f
4	Temp_C	35.05	temperature of umac	%05.2f
5	PS_volts	05.05	power supply voltage	%05.2f
6	AIN00	-000.496	analog input to umac	%08.3f
7	AIN01	-000.496	analog input to umac	%08.3f
8	AIN02	-000.496	analog input to umac	%08.3f
9	AIN03	-000.496	analog input to umac	%08.3f
10	AIN04	-000.496	analog input to umac	%08.3f
11	AIN05	-000.496	analog input to umac	%08.3f
12	AIN06	-000.496	analog input to umac	%08.3f
13	AIN07	-000.496	analog input to umac	%08.3f
14	AIN08	-000.496	analog input to umac	%08.3f
15	AIN09	-000.496	analog input to umac	%08.3f
16	AIN10	-000.496	analog input to umac	%08.3f
17	AIN11	-000.496	analog input to umac	%08.3f
18	AIN12	-000.496	analog input to umac	%08.3f
19	AIN13	-000.496	analog input to umac	%08.3f
20	AIN14	-000.496	analog input to umac	%08.3f
21	AIN15	-000.496	analog input to umac	%08.3f
22	AIN16	-000.496	analog input to umac	%08.3f
23	AIN17	-000.496	analog input to umac	%08.3f
24	AIN18	-000.496	analog input to umac	%08.3f
25	AIN19	-000.496	analog input to umac	%08.3f
26	AIN20	-000.496	analog input to umac	%08.3f
27	AIN21	-000.496	analog input to umac	%08.3f
28	AIN22	-000.496	analog input to umac	%08.3f
29	AIN23	-000.496	analog input to umac	%08.3f

File: ud_<timecode>.<STN>

Return to File-Code

Col #	Name	Format and Missing Value	Description	Scanf info

		Code (mvc)		
1	Station_ID	WSA	3-character ID code	%3s
2	Year	1993	Year	%4d
3	StartTime_UTC	012.12345	DOY and FRACTIONAL_DOY (January 1 = 1)	%09.5f
4	state	0003	digital state of umac	%4s

File: vol<timecode>.<STN> **File: vol<timecode>.<STN>** see volumes<timecode>.STN
File: volumes<timecode>.<STN>
Return to File-Code

Col #	Name	Format and Missing Value Code (mvc)	Description	Scanf info
1	Station_ID	WSA	3-character ID code	%3s
2	Year	1993	Year	%4d
3	StartTime_UTC	012.12345	DOY and FRACTIONAL_DOY (January 1 = 1)	%09.5f
4	Volume_info	(string)	Sampling volume information. (may contain embedded tabs, spaces, and/or commas)	%s

File: w__<timecode>.<STN>
Return to File-Code

Col #	Name	Format and Missing Value Code (mvc)	Description	Scanf info
1	Station_ID	WSA	3-character ID code	%3s
2	Year	1993	Year	%4d
3	StartTime_UTC	012.12345	DOY and FRACTIONAL_DOY (January 1 = 1)	%09.5f
4	Flags	0010	4-character code representing system status	%4s
5	Wind_Spd			
6	Wind_Dir			

File: wm_<timecode>.<STN>
Return to File-Code
Written at the monitor interval (usually 15 minutes). Contains the instantaneous values of the two setpoint channels.

Col #	Name	Format and Missing Value Code (mvc)	Description	Scanf info
1	Station_ID	WSA	3-character ID code	%3s
2	Year	1993	Year	%4d
3	StartTime_UTC	012.12345	DOY and FRACTIONAL_DOY (January 1 = 1)	%09.5f
4	Sp_Chan_A			

5	Sp_Chan_B			

File: wx_<timecode>.<STN>

Return to File-Code

Col #	Name	Format and Missing Value Code (mvc)	Description	Scanf info
1	Station_ID	XXX	3-character ID code	%3s
2	Year	9999	Year	%4d
3	StartTime_UTC	999.99999	DOY and FRACTIONAL_DOY (January 1 = 1)	%09.5f
4	F_xxx F_amb	FFFF FFFFFFFF	Flags field (link to definition of wx_ flag specification)	%4.4X %8.8X
5	T_xxx	999.9	Temperature (deg C)	%05.1f
6	U_xxx	999.9	Relative Humidity (%)	%05.1f
7	P_xxx	9999.9	Pressure (hPa)	%06.1f
8	WS_xxx	99.9	Wind speed (m/s)	%04.1f
9	WD_xxx	999	Wind direction (deg true)	%03d
10	Wz_xxx	999.99	Visibility (km)	%06.2f
11	Wx_xxx	999	3-digit code for current weather, "TI" 000-099 WMO SYNOP Code Table 4680 100-199 WSA Specific Codes (Last Two digits) xxx NWS bCx bPx bLx bRx bSx lpx ZLx ZRx x=intensity code (minus, plus, blank) b=blank space	%03s

Record Type	xxx Variable Name	Data Source
wx_	amb	Best Available Source Source
wx1_	aer	GMD AERO Group
wx2_	gmd	GMD OBS Group
wx3_	arm	ARM Sensors

wx4_	stn	Station-Specific Sensors

File: a_[AHMD]<timecode>.<STN>*[average format]*

Return to File-Code

Averages reported in fields 5 through 22 are by default the geometric average, and a corresponding geometric standard deviation. If the corresponding "N" in field 44 through 58 is negative, the average and standard deviation for that measurement is arithmetic, not geometric. Also, arithmetic averaging is used to calculate the hourly average and 2-hourly average files.

The reported geometric standard deviation is a dimensionless number, calculated as the standard deviation of the natural logarithm of the input data. If the input data are log-normally distributed with geometric average "avg" and geometric standard deviation "gsd", then 68% of the data will fall within the interval between (avg * exp(gsd)) and (avg / exp(gsd)).

Fields 6-13 refer to the "default" size range, which has either no upper size cut or a 10-um upper size cut (aerodynamic diameter). Fields 15-22 are for the "alternate" size range, which has a 1-um upper size cut (aerodynamic diameter).

Col #	Name	Format and Missing Value Code (mvc)	Description	Scanf info
1	Station_ID	WSA	3-character ID code	%3s
2	Year	1993	Year	%4d
3	StartTime_UTC	123.12	Integer part is Day of Year, 1 = January 1. Fractional part is time at the start of the averaging interval, UTC.	%6.2f
4	Flags	0011	4-character code representing system status.	%4s
5	CN_control	±9.999e-99	Aerosol number concentration (cm-3) at ambient T&P, measured with CNC on "control" inlet	%10.3e
6	CN_ambient (default size)	±9.999e-99	Aerosol number concentration (cm-3) at ambient T&P, measured with CNC on "ambient" inlet	%10.3e
7	Bap_G (default size)	±9.999e-99	Aerosol light absorption coefficient (m-1), green channel.	%10.3e
8	Bsp_B (default size)	±9.999e-99	Aerosol total light scattering coefficient (m-1), blue channel.	%10.3e
9	Bsp_G (default size)	±9.999e-99	Aerosol total light scattering coefficient (m-1), green channel.	%10.3e
10	Bsp_R (default size)	±9.999e-99	Aerosol total light scattering coefficient (m-1), red channel.	%10.3e
11	Bbsp_B -or- Bsp_NIR (default size)	±9.999e-99	Aerosol backwards-hemispheric light scattering coefficient (m-1), blue channel. For stations equipped with 4-wavelength nephelometers, this field is aerosol total light scattering coefficient (m-1), near infrared channel.	%10.3e
12	Bbsp_G (default size)	±9.999e-99	Aerosol backwards-hemispheric light scattering coefficient (m-1), green channel.	%10.3e
13	Bbsp_R (default size)	±9.999e-99	Aerosol backwards-hemispheric light scattering coefficient (m-1), red channel.	%10.3e
14	Neph_RH	±999	Relative Humidity (percent) inside nephelometer	%4d

15	CN_ambient, (alternate size)	±9.999e-99	Aerosol number concentration (cm-3) at ambient T&P, measured with CNC on "ambient" inlet	%10.3e
16	Bap_G, (alternate size)	±9.999e-99	Aerosol light absorption coefficient (m-1), green channel.	%10.3e
17	Bsp_B, (alternate size)	±9.999e-99	Aerosol total light scattering coefficient (m-1), blue channel.	%10.3e
18	Bsp_G, (alternate size)	±9.999e-99	Aerosol total light scattering coefficient (m-1), green channel.	%10.3e
19	Bsp_R, (alternate size)	±9.999e-99	Aerosol total light scattering coefficient (m-1), red channel.	%10.3e
20	Bbsp_B -or- Bsp_NIR, (alternate size)	±9.999e-99	Aerosol backwards-hemispheric light scattering coefficient (m-1), blue channel. For stations equipped with 4-wavelength nephelometers, this field is aerosol total light scattering coefficient (m-1), near infrared channel.	%10.3e
21	Bbsp_G, (alternate size)	±9.999e-99	Aerosol backwards-hemispheric light scattering coefficient (m-1), green channel.	%10.3e
22	Bbsp_R, (alternate size)	±9.999e-99	Aerosol backwards-hemispheric light scattering coefficient (m-1), red channel.	%10.3e
23	SD_CN_control	±9.999e-99	Standard deviation of CN_control data this period	%10.3e
24	SD_CN_ambient	±9.999e-99	Standard deviation of CN_ambient data this period	%10.3e
25	SD_Bap_G	±9.999e-99	Standard deviation of Bap_G data this period	%10.3e
26	SD_Bsp_B	±9.999e-99	Standard deviation of Bsp_B data this period	%10.3e
27	SD_Bsp_G	±9.999e-99	Standard deviation of Bsp_G data this period	%10.3e
28	SD_Bsp_R	±9.999e-99	Standard deviation of Bsp_R data this period	%10.3e
29	SD_Bbsp_B -or- SD_Bsp_NIR	±9.999e-99	Standard deviation of Bbsp_B or Bsp_NIR data this period	%10.3e
30	SD_Bbsp_G	±9.999e-99	Standard deviation of Bbsp_G data this period	%10.3e
31	SD_Bbsp_R	±9.999e-99	Standard deviation of Bbsp_R data this period	%10.3e
32	SD_Neph_RH	±999	Standard deviation of Neph_RH data this period	%4d
33	SD_CN_ambient, (alternate size)	±9.999e-99	Standard deviation of CN_ambient (alternate size) data this period	%10.3e
34	SD_Bap, (alternate size)	±9.999e-99	Standard deviation of Bap (alternate size) data this period	%10.3e
35	SD_Bsp_B, (alternate size)	±9.999e-99	Standard deviation of Bsp_B (alternate size) data this period	%10.3e
36	SD_Bsp_G, (alternate size)	±9.999e-99	Standard deviation of Bsp_G (alternate size) data this period	%10.3e
37	SD_Bsp_R, (alternate size)	±9.999e-99	Standard deviation of Bsp_R (alternate size) data this period	%10.3e
38	SD_Bbsp_B -or- SD_Bsp_NIR, (alternate size)	±9.999e-99	Standard deviation of Bbsp_B or Bsp_NIR (alternate size) data this period	%10.3e
39	SD_Bbsp_G, (alternate size)	±9.999e-99	Standard deviation of Bbsp_G (alternate size) data this period	%10.3e
40	SD_Bbsp_R, (alternate size)	±9.999e-99	Standard deviation of Bbsp_R (alternate size) data this period	%10.3e
41	N_CN_control	±99999	Number of data points used in computation	%6d

42	N_CN_ambient	±99999	Number of data points used in computation	%6d
43	N_Bap_G	±99999	Number of data points used in computation	%6d
44	N_Bsp_B	±99999	Number of data points used in computation	%6d
45	N_Bsp_G	±99999	Number of data points used in computation	%6d
46	N_Bsp_R	±99999	Number of data points used in computation	%6d
47	N_Bbsp_B -or- N_Bsp_NIR	±99999	Number of data points used in computation	%6d
48	N_Bbsp_G	±99999	Number of data points used in computation	%6d
49	N_Bbsp_R	±99999	Number of data points used in computation	%6d
50	N_Neph_RH	±99999	Number of data points used in computation	%6d
51	N_CN_ambient, (alternate size)	±99999	Number of data points used in computation	%6d
52	N_Bap_G, (alternate size)	±99999	Number of data points used in computation	%6d
53	N_Bsp_B, (alternate size)	±99999	Number of data points used in computation	%6d
54	N_Bsp_G, (alternate size)	±99999	Number of data points used in computation	%6d
55	N_Bsp_R, (alternate size)	±99999	Number of data points used in computation	%6d
56	N_Bbsp_B -or- N_Bsp_NIR, (alternate size)	±99999	Number of data points used in computation	%6d
57	N_Bbsp_G, (alternate size)	±99999	Number of data points used in computation	%6d
58	N_Bbsp_R, (alternate size)	±99999	Number of data points used in computation	%6d

File: la_[AHMD]<timecode>.<STN>*[average format for la_ file type]*

Return to File-Code

Averages reported in fields 5 through 10 are by default the geometric average, and a corresponding geometric standard deviation. If the corresponding "N" in field 17 through 22 is negative, the average and standard deviation for that measurement is arithmetic, not geometric. Also, arithmetic averaging is used to calculate the hourly average and 2-hourly average files.

The reported geometric standard deviation is a dimensionless number, calculated as the standard deviation of the natural logarithm of the input data. If the input data are log-normally distributed with geometric average "avg" and geometric standard deviation "gsd", then 68% of the data will fall within the interval between (avg * exp(gsd)) and (avg / exp(gsd)).

Col #	Name	Format and Missing Value Code (mvc)	Description	Scanf info
1	Station_ID	WSA	3-character ID code	%3s
2	Year	1993	Year	%4d

3	StartTime_UTC	123.12	Integer part is Day of Year, 1 = January 1. Fractional part is time at the start of the averaging interval, UTC.	%6.2f
4	Flags	0011	4-character code representing system status.	%4s
5	Bap_B, (default size)	±9.999e-99	Aerosol total light absorption coefficient (m^{-1}), blue channel.	%10.3e
6	Bap_G, (default size)	±9.999e-99	Aerosol total light absorption coefficient (m^{-1}), green channel.	%10.3e
7	Bap_R, (default size)	±9.999e-99	Aerosol total light absorption coefficient (m^{-1}), red channel.	%10.3e
8	Bap_B, (alternate size)	±9.999e-99	Aerosol total light absorption coefficient (m^{-1}), blue channel.	%10.3e
9	Bap_G, (alternate size)	±9.999e-99	Aerosol total light absorption coefficient (m^{-1}), green channel.	%10.3e
10	Bap_R, (alternate size)	±9.999e-99	Aerosol total light absorption coefficient (m^{-1}), red channel.	%10.3e
11	SD_Bap_B	±9.999e-99	Standard deviation of Bap_B data this period	%10.3e
12	SD_Bap_G	±9.999e-99	Standard deviation of Bap_G data this period	%10.3e
13	SD_Bap_R	±9.999e-99	Standard deviation of Bap_R data this period	%10.3e
14	SD_Bap_B, (alternate size)	±9.999e-99	Standard deviation of Bap_B (alternate size) data this period	%10.3e
15	SD_Bap_G, (alternate size)	±9.999e-99	Standard deviation of Bap_G (alternate size) data this period	%10.3e
16	SD_Bap_R, (alternate size)	±9.999e-99	Standard deviation of Bap_R (alternate size) data this period	%10.3e
17	N_Bap_B	±99999	Number of data points used in computation	%6d
18	N_Bap_G	±99999	Number of data points used in computation	%6d
19	N_Bap_R	±99999	Number of data points used in computation	%6d
20	N_Bap_B, (alternate size)	±99999	Number of data points used in computation	%6d
21	N_Bap_G, (alternate size)	±99999	Number of data points used in computation	%6d
22	N_Bap_R, (alternate size)	±99999	Number of data points used in computation	%6d

FLAGS Field Specification

The flags field is the 4-character hexadecimal representation of a 16-bit integer. It is used in the a_, ad_, and h_ files.

Char. / Bit Pos.	Hex bit mask	Description	Bit set (1)	Bit clear (0)
1		Project specific		
1:3	0x8000	Not used yet		
1:2	0x4000	Not used yet		
1:1	0x2000	Not used yet		
1:0	0x1000	Not used yet		

2		Corrections applied to data		
2:3	0x0800	Zero Subtraction Corrections	Corrections Applied	Corrections Not Applied
2:2	0x0400	neph truncation corrections	corrections applied	corrections not applied
2:1	0x0200	PSAP spot size and calibration corrections	corrections applied	corrections not applied
2:0	0x0100	STP corrections	data corrected to STP	data not corrected to STP
3		Sampling conditions		
3:3	0x0080	Not used		
3:2	0x0040	Not used		
3:1	0x0020	PSAP filter loading	transmittance < 0.7 (Bap data less reliable)	transmittance >= 0.7
3:0	0x0010	Analyzer impactor state	Alternate size range	
(valve closed)	Default size range			
(valve open)				
4		Sampling conditions		
4:3	0x0008	Not used		
4:2	0x0004	Wind sector control	Wind speed or direction indicate local pollution is likely	Local pollution absent
4:1	0x0002	Manual contamination check	Local pollution present	Local pollution absent
4:0	0x0001	Automatic contamination controller	Local pollution present	Local pollution absent

The default size range is defined to be the total from 0-10 micrometers aerodynamic diameter. The alternate size range is from 0-1 micrometers aerodynamic diameter.

wx_ File FLAGS Field Specification

The flags field is the 4-character hexadecimal representation of a 32-bit integer. This specification is exclusively used in the wx_ file. The flags field of the wx_ file is organized into two parts: 0x XXXX 0000 Where the XXXX (bits 16-32) segment is specific to the wx_ file (see specification table below) and the 0000 (bits 1-16) segment is the standard for all file types (see above specification). The two combined into a 32 bit flag gives the complete wx_ file specification.

Char. / Bit Pos.	Use	wx1	wx2	wx3
1-4	Contamination	(see above table for bits 1-16)		
5-16	Reserved	(see above table for bits 1-16)		

17-18:1	F	0x 0001 XXXX	0x 0002 XXXX	0x 0003 XXXX
19-20:1	T	0x 0004 XXXX	0x 0008 XXXX	0x 000C XXXX
21-22:2	U	0x 0010 XXXX	0x 0020 XXXX	0x 0030 XXXX
23-24:2	P	0x 0040 XXXX	0x 0080 XXXX	0x 00C0 XXXX
25-26:3	Ws	0x 0100 XXXX	0x 0200 XXXX	0x 0300 XXXX
27-28:3	Wd	0x 0400 XXXX	0x 0800 XXXX	0x 0C00 XXXX
29-30:4	Wz	0x 1000 XXXX	0x 2000 XXXX	0x 3000 XXXX
31-32:4	Wx	0x 4000 XXXX	0x 8000 XXXX	0x C000 XXXX