

## CPL ATTENUATED TOTAL BACKSCATTER (ATB) HDF FILE

Definitions of Global Attributes:

<i>Parameter Name</i>	<i>Units</i>	<i>Data Type</i>	<i>Dim . 1</i>	<i>Dim . 2</i>	<i>Min Value</i>	<i>Max Value</i>	<i>Description</i>
Date	n/a	string	1		n/a	n/a	Date for this flight
Project	n/a	string	1		n/a	n/a	Field project name
NumRecs	n/a	Long integer	1		1	36000	Number of horizontal records (profiles)
NumBins	n/a	Long integer	1		900	900	Number of vertical lidar bins in the optical profiles
Frame_Top	km	Float	1		20.0	23.0	Top height of CPL reference frame (first bin)
Bin_Width	m	Float	1		29.0	31.0	Vertical resolution of the lidar
NumWave	n/a	Long integer	1		3	3	Number of wavelengths in lidar output -- Wavelength (wl) index: 0=355,1=532,2=1064nm
Hori_Res	sec	Long integer	1		1	5	Horizontal Resolution of the lidar profiles (typically 1 sec or 200 m)
NumChans	n/a	Short integer	1		4	10	Total number of lidar channels, including annulus channels if avail, whereas nchan= 4 always
MaxLay	n/a	Long integer	1		4	10	Maximum number of layers allowed per profile
Start_JDay	utc	Float	1		0.0	366.0	Decimal julian day for the start time of the flight
End_JDay	utc	Float	1		0.0	366.0	Decimal julian day for the end time of the flight

## CPL ATTENUATED TOTAL BACKSCATTER (ATB) HDF FILE

Definitions of Science Data Sets:

<i>Parameter Name</i>	<i>Units</i>	<i>Data Type</i>	<i>Dim. 1</i>	<i>Dim. 2</i>	<i>Dim. 3</i>	<i>Min Value</i>	<i>Max Value</i>	<i>Description</i>
Dec_JDay	utc	Double	Num Recs			0.0	367.0	Decimal day of year to 5 decimal places (second) for current profile
Latitude	degrees	Float	Num Recs			-90.0	90.0	Latitude of profile, decimal degrees, S= '-'
Longitude	degrees	Float	Num Recs			-180.	180.	Longitude of profile, decimal degrees, W= '-'
Gnd_Hgt	km	Float	Num Recs			-999.	20.0	Height of earth's surface detected by lidar, missing= -999.0
Bin_Alt	km	Float	Num Bins			-20.0	25.0	Altitude in km for each vertical bin
Saturate	km	Float	Num Chans	Num Recs		-5.0	23.0	Height where detector saturation occurred per channel, no saturation= -5000.0
Depol_Ratio	n/a	Float	Num Bins	Num Recs		0.0	1.0	Final depolarization ratio profile for 1064nm, valid only inside layers
NumLayers	n/a	Long integer	Num Recs			0	10	Number of layers detected in current profile
Layer_Type	n/a	Short integer	10	Num Recs		0	4	Layer type: 0=missing, 1=PBL, 2=elevated aerosol, 3=cloud, 4= indeterminate
Layer_Top_Alt	km	Float	10	Num Recs		-999.	22.0	Heights of all layer tops above mean sea level in profile
Layer_Bot_Alt	km	Float	10	Num Recs		-999.	22.0	Heights of all layer bottoms above mean sea level in profile
Plane_Pitch	degrees	Float	Num Recs			-180.	180.	Aircraft pitch, decimal degrees, down= '-'
Plane_Roll	degrees	Float	Num Recs			-180.	180.	Aircraft roll, decimal degrees, left turn= '-'

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Definitions of Science Data Sets (Page 2):

<i>Parameter Name</i>	<i>Units</i>	<i>Data Type</i>	<i>Dim. 1</i>	<i>Dim. 2</i>	<i>Dim. 3</i>	<i>Min Value</i>	<i>Max Value</i>	<i>Description</i>
Plane_Alt	km	Float	Num Recs			-999.	20.0	Height of the aircraft above mean sea level, missing= -999.0
ATB_355	km-1 sr-1	Double	Num Bins	Num Recs		10 <sup>3</sup>	10 <sup>5</sup>	Attenuated total backscatter profile for 355 nm for each record
Cali_355	km <sup>3</sup> /J s <sup>2</sup>	Double	Num Recs			-9.9	10 <sup>6</sup>	Calibration constant at 355 nm for each record
ATB_532	km-1 sr-1	Double	Num Bins	Num Recs		-1.0	10.0	Attenuated total backscatter profile for 532 nm for each record
Cali_532	km <sup>3</sup> /J s <sup>2</sup>	Double	Num Recs			10 <sup>4</sup>	10 <sup>6</sup>	Calibration constant at 532 nm for each record
ATB_1064	km-1 sr-1	Double	Num Bins	Num Recs		-1.0	10.0	Attenuated total backscatter profile for 1064 nm for each record
Cali_1064	km <sup>3</sup> J-1 s-2	Double	Num Recs			10 <sup>3</sup>	10 <sup>5</sup>	Calibration constant at 1064 nm for each record
Pressure	hPa	Short integer	Num Bins			0	1100	Atmospheric pressure profile of first record, currently used for whole flight
Temperature	C	Float	Num Bins			-100	100.	Atmospheric temperature profile of first record, currently used for whole flight
RH	%	Float	Num Bins			0.0	100.	Atmospheric relative humidity profile of first record, currently used for whole flight
Mol_Back	km-1 sr-1	Float	Num Bins	Num Wave		0	10 <sup>-2</sup>	Rayleigh backscatter profile of first record, currently used for whole flight for all 3 wavelengths