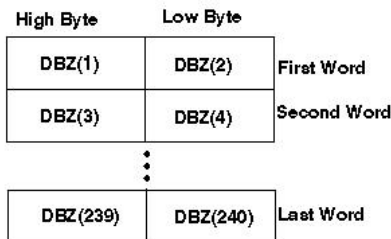


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The Lower Fuselage (LF) radar animations are produced by HRD/AOML/NOAA. The data is collected aboard NOAA's WP-3D turboprops. The animations consist of a series of LF sweeps. The LF sweeps have the descriptor .swp and follow the internal HRD composite format convention. There is one .swp file per LF sweep. The sweeps are stored as 2 dimensional binary files. The files are written with Fortran90 software. [Click here for Fortran90 software](#) to read the data. [Click here for MatLab function](#) to read the data. LF sweeps are either plane relative, with the plane position in the middle of the Cartesian map; or storm relative, with the storm position in the middle of the Cartesian map. The first record on the files is the radar header containing 128 bytes of general information. Followed by 16 bit packed words containing dbz values:



The dbzs are packed 2 per word. The overall range of the data is from -31.5 dbz to +95.5 dbz in half db steps. The no data flag is -999.0. Note that these bytes are packed into words with the first byte going into the high byte of the first word:



What follows is a description of the information on the Radar Header. The column on the left contains variable types and sizes, the column in the middle describes the variable contents, and the right column shows sample values from the Frances N43RF flight on August 30, 2004.

-30 WORDS CHARACTER-		
Size	Content	Example
character*4	identifies the file type	swp
character*8	flight identification: ymodyID 42 plane ID is the "h" 43 plane ID is the "i"	04083011
character*12	storm or project name	Frances
character*4	radar identifier: "LF"lower fuselage "TAIL"tail&doppler "LB"land based	LF
character*32	comment, the track file name if one was used	none
character*32	time file was created	Mon, Dec 6, 2004, 02:06:01 PM
character*28	the flight level file name if one was used	none

-10 WORDS INTEGER-		
Size	Content	Example
1: integer*4	x horizontal dimension on the 3d Cartesian Plane in bins	240
2: integer*4	y vertical dimension on the 3d Cartesian Plane in bins	240
3: integer*4	z height or level on the 3 dimensional Cartesian Plane	1
4: integer*4	number of sweeps on the composite display	1
5: integer*4	flag: -1 center plane relative 0 center earth relative 1 center storm relative	-1
6: integer*4	flag: 0 for folded Doppler radar values 1 for unfolded Doppler radar values	0
7: integer*4	flag: 0 intervening attenuation is off 1 intervening attenuation is on	0
8: integer*4	flag: Bit 0 = 0 unedited Doppler file, 1 edited Doppler file Bit 1 = 0 vt not added to file, 1 vt added to file Bit 2 = 0 Joss &Waldvogel vt, 1 Willis vt	0
9: integer*4	spare	0

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10:integer*4|spare|0

-24 WORDS REAL-			
Type	Content	Units	Example
1: real	start time of the Cartesian plane	(seconds)	65450.81
2: real	end time of the Cartesian plane	(seconds)	65482.76
3: real	reference for latitude position	(degrees)	19.40
4: real	reference for longitude position	(degrees)	-59.46
5: real	x scale resolution	(kilometer/bin)	1.50
6: real	y scale resolution	(kilometer/bin)	1.50
7: real	z scale resolution	(kilometer/level)	0.50
8: real	x or horizontal distance with respect to the origin	(kilometer)	180.00
9: real	y or vertical distance with respect to the origin	(kilometer)	180.00
10:real	z distance of first level or standard dev. of track for cross section	(km)	0.00
11:real	rotation angle or average track for cross section	(degrees)	0.00
12:real	radar altitude	(meters)	2773.00
13:real	calibration coefficient 1	(1/16 dbZ)	-27.13
14:real	calibration coefficient 2	(1/4096 of dbZ)	0.33
15:real	azimuth correction	(degrees)	0.00
16:real	elevation correction	(degrees)	0.00
17:real	dbz noise threshold	(dbz)	-99.00 (no threshold used)
18:real	peak power or dbz range for thresholding	(kw) or (km)	-99.00 (not used)
19:real	pitch correction	(degrees)	0.00
20:real	drift correction	(degrees)	0.00
21:real	roll correction	(degrees)	0.00
22:real	maximum range of the radar	(kilometer)	384.00
23:real	spare for LF, height of the bright band for TAIL;	(km)	0.00
24:real	spare for LF, depth of the bright band	(km)	0.00

FILE TYPE DESCRIPTORS	
"CMP "	LF composite
"TA3D"	TAIL 3 dimensional
"DOP3"	Doppler 3 dimensional
"WIND"	Wind 3 dimensional
"XSEC"	TAIL cross section
"SWP "	LF single sweep

