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Title

fitacf DataMap variables definitions

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Summary

A description of the variables stored in a fitacf DataMap file.

Description

1. Introduction

The fitacf files are stored using the DataMap self-describing file format. Listed here are the variable names and definitions.

2. Scalars

The scalar components of the fitacf file format are listed below:

Variable Name	Data Type	Description
radar.revision.major	char	Major version number of the radar operating system.
radar.revision.minor	char	Minor version number of the radar operating system.
origin.code	char	Code indicating origin of the data.
origin.time	string	ASCII representation of when the data was generated.
origin.command	string	The command line or control program used to generate the data.
cp	short	Control program identifier.
stid	short	Station identifier.
time.yr	short	Year.
time.mo	short	Month.
time.dy	short	Day.
time.hr	short	Hour.
time.mt	short	Minute.
time.sc	short	Second.
time.us	short	Micro-Second.
txpow	short	Transmitted power (kW).
nave	short	Number of pulse sequences transmitted.
atten	short	Attenuation level.

lagfr	short	Lag to first range (microseconds).
smsep	short	Sample separation (microseconds).
ercod	short	Error code.
stat.agc	short	AGC status word.
stat.lopwr	short	LOPWR status word.
noise.search	float	Calculated noise from clear frequency search.
noise.mean	float	Average noise across frequency band.
channel	short	Channel number for a stereo radar (zero for all others).
bmnum	short	Beam number.
bmazm	float	Beam azimuth.
scan	short	Scan flag.
offset	short	Offset between channels for a stereo radar (zero for all others).
rxrise	short	Receiver rise time (microseconds).
intt.sc	short	Whole number of seconds of integration time.
intt.us	short	Fractional number of microseconds of integration time.
txpl	short	Transmit pulse length (microseconds).
mpinc	short	Multi-pulse increment (microseconds).
mppul	short	Number of pulses in sequence.
mplgs	short	Number of lags in sequence.
nrang	short	Number of ranges.
frang	short	Distance to first range (kilometers).
rsep	short	Range separation (kilometers).
xcf	short	XCF flag.
tfreq	short	Transmitted frequency.
mxpwr	int	Maximum power (kHz).
lvmax	int	Maximum noise level allowed.
fitacf.revision.major	int	Major version number of the FitACF algorithm.
fitacf.revision.minor	int	Minor version number of the FitACF algorithm.
combf	string	Comment buffer.
noise.sky	float	Sky noise.
noise.lag0	float	Lag zero power of noise ACF.
noise.vel	float	Velocity from fitting the noise noise ACF.

2. Arrays

The Array components of the fitacf file format are listed below:

Variable Name	Data Type	Dimensions	Description
ptab[*mppul*]	short	*mppul*	Pulse table.
ltab[2][*mplgs*]	short	2,*mplgs*	Lag table.
pwr0[*nrng*]	float	*nrng*	Lag zero power.
slist[0-*nrng*]	short	0-*nrng*	List of stored ranges.
nlag[0-*nrng*]	short	0-*nrng*	Number of points in the fit.

qflg[0-*nrng*]	char	0-*nrng*	Quality of fit flag for ACF.
gflg[0-*nrng*]	char	0-*nrng*	Ground scatter flag for ACF.
p_l[0-*nrng*]	float	0-*nrng*	Power from lambda fit of ACF.
p_l_e[0-*nrng*]	float	0-*nrng*	Power error from lambda fit of ACF.
p_s[0-*nrng*]	float	0-*nrng*	Power from sigma fit of ACF..
p_s_e[0-*nrng*]	float	0-*nrng*	Powr error from sigma fit of ACF.
v[0-*nrng*]	float	0-*nrng*	Velocity from ACF.
v_e[0-*nrng*]	float	0-*nrng*	Velocity error from ACF.
w_l[0-*nrng*]	float	0-*nrng*	Spectral width from lambda fit of ACF.
w_l_e[0-*nrng*]	float	0-*nrng*	Spectral width error from lambda fit of ACF.
w_s[0-*nrng*]	float	0-*nrng*	Spectral width from sigma fit of ACF.
w_s_e[0-*nrng*]	float	0-*nrng*	Spectral width error from sigma fit of ACF.
sd_l[0-*nrng*]	float	0-*nrng*	Standard deviation of sigma fit.
sd_s[0-*nrng*]	float	0-*nrng*	Standard deviation of lambda fit.
sd_phi[0-*nrng*]	float	0-*nrng*	Standard deviation of phase fit of ACF.
x_qflg[0-*nrng*]	char	0-*nrng*	Quality of fit flag for XCF.
x_gflg[0-*nrng*]	char	0-*nrng*	Ground scatter flag for XCF.
x_p_l[0-*nrng*]	float	0-*nrng*	Power from lambda fit of XCF.
x_p_l_e[0-*nrng*]	float	0-*nrng*	Power error from lambda fit of XCF.
x_p_s[0-*nrng*]	float	0-*nrng*	Power from sigma fit of XCF.
x_p_s_e[0-*nrng*]	float	0-*nrng*	Power error from sigma fit of XCF.
x_v[0-*nrng*]	float	0-*nrng*	Velocity from XCF.
x_v_e[0-*nrng*]	float	0-*nrng*	Velocity error from XCF.
x_w_l[0-*nrng*]	float	0-*nrng*	Spectral width from lambda fit of XCF.
x_w_l_e[0-*nrng*]	float	0-*nrng*	Spectral width error from lambda fit of XCF.
x_w_s[0-*nrng*]	float	0-*nrng*	Spectral width from sigma fit of XCF.
x_w_s_e[0-*nrng*]	float	0-*nrng*	Spectral width error from sigma fit of XCF.
phi0[0-*nrng*]	float	0-*nrng*	Phase determination at lag zero of the ACF.
phi0_e[0-*nrng*]	float	0-*nrng*	Phase determination error at lag zero of the ACF.
elv[0-*nrng*]	float	0-*nrng*	Angle of arrival estimate.
elv_low[0-*nrng*]	float	0-*nrng*	Lowest estimate of angle of arrival.
elv_high[0-*nrng*]	float	0-*nrng*	Highest estimat of angle of arrival.
x_sd_l[0-*nrng*]	float	0-*nrng*	Standard deviation of lambda fit of XCF.
x_sd_s[0-*nrng*]	float	0-*nrng*	Standard deviation of sigma fit of XCF.
x_sd_phi[0-*nrng*]	float	0-*nrng*	Standard deviation of phase fit of XCF.

The extent of each dimension is determined by the radar operating parameters. For example a value of `mppul` of 7 would result in the array `ptab[7]`.

The number of ranges stored in the data file is dependent on whether the ACF can be fitted. The array `slist` lists the range gate of each set of fitted parameters. For example if the first element in `slist` is 44, then the first element in the velocity array, `v[0]`, is from range 44.

The arrays for the XCF fit, will only be present in the record if an XCF is calculated. This is indicated if the scalar `xcf` is set to 1.

References

RFC #0006

History

2007/03/26 Revision incorporating origin and beam azimuth.
2004/07/29 Initial Revision.