CODAR
OCEAN SENSORS

Spectra Point Extractor Diagnostic File Format

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Spectra Point Extractor Diagnostic File Format

SpectraPointExtractor produces analysis files of one or group of spectra range,doppler during radial processing that start with **STAT_** and end with **.sdt** that helps to trouble shoot system issues. The .xdt file is built upon the Columnar Table Format (CTF) which is covered in a separate document for which you should be familiar with before reading this document.

To plot these files, use the **DiagDisplay** application in the Viewers folder. DiagDisplay can display multiple STAT files simultaneously, select the STAT_ files you want in the Finder (use shift and/or command key to select) and drag the multiple selection to DiagDisplay icon. Note, if you try to plot a year's worth or more, you will need a very fast machine or a lot of patience.

File Naming

These files are put into "/Codar/SeaSonde/Data/Diagnostics" and have the file naming format of **STAT_XXXX_yyyy_mm_dd_M_r0_d0_RxD.sdt**
where
XXXX is the radial site code,
yyyy is the year, mm is the month, and dd is the day.
_M is the peak method used which currently is (S for Summation or M for Maximum)
_r0 is the range cell used replacing '0' with the range cell number.
_d0 is the doppler cell used replacing '0' with the doppler cell number.
_RxD is added only if the detection area is larger area than one by one, in which case 'R' is replaced with the range cell width and 'D' is replaced with the doppler width used.

The processing tools are hard coded to create new STAT_ files weekly on Sundays.

Identification of the File

The first keyword of the file will typically be '%CTF: <version>' describing the version of the CTF file. Before version 1.00, the file will be missing this key; however, it is still readable with this standard.

Within the first ten lines of the file will must be a keyword of:
%FileType: <type> <subtype> <name>
The <**type**> must be **DIAG** to identify it as a diagnostic file.
The <**subtype**> must be **pcss** to identify it as a hardware diagnostic file.

Table Data

The table data time starts from the files **%TimeStamp:** key.
The **%TableType: <type> <subtype>** must have a <type> of **pcss** while the <subtype> **rsp1** describes the current table column output and will change in the future as more columns are added or inserted. The best way to read this files is to use the **%TableColumnType:** key, which contain a list of four character codes describing each column.

The <subtype> **'rsp1'** output is:
%TableColumnTypes: TIME A1DB A2DB A3DB A13M A13A A23M A23A A12M A12A A1NF A2NF A3NF PKRC PKDC IBSA ISA1 IDA1 IDA2 MBSA MSA1 MDA1 MDA2 PHA1 PHA2 AMP1 AMP2 R13M R13A R23M R23A TYRS TMON TDAY THRS TMIN TSEC

Each table row is the processing result of a single CSS into a short time radial.

The column character codes can be decoded as:

TIME	Recorded time of the data row in minutes from the %TimeStamp:
A1DB	Loop1 Signal Amplitude in dBm.
A2DB	Loop2 Signal Amplitude in dBm.
A3DB	Monopole Signal Amplitude in dBm.
A13M	Loop1*Monopole relative signal magnitude in voltage-squared.
A13A	Loop1*Monopole relative signal phase in degrees.
A23M	Loop2*Monopole relative signal magnitude in voltage-squared.
A23A	Loop2*Monopole relative signal phase in degrees.
A12M	Loop1*Loop2 relative signal magnitude in voltage-squared.
A12A	Loop1*Loop2 relative signal phase in degrees.
A1NF	Loop1 noise floor in dBm for range cell.
A2NF	Loop2 noise floor in dBm for range cell.
A3NF	Monopole noise floor in dBm for range cell.

PKRC Peak range cell if given a search area. If sum method, this is weighted by power.

PKDC Peak doppler cell if given a search area relative to DC bin. If sum method, this is weighted by power.

IBSA Ideal Pattern bearing MUSIC selection angle. 1=single angle, 2=dual angle

ISA1 Ideal Pattern bearing single angle solution

IDA1 Ideal Pattern bearing dual angle first bearing solution

IDA2 Ideal Pattern bearing dual angle second bearing solution

MBSA Measure Pattern bearing MUSIC selection angle. 1=single angle, 2=dual angle

MSA1 Measure Pattern bearing single angle solution

MDA1 Measure Pattern bearing dual angle first bearing solution

MDA2 Measure Pattern bearing dual angle second bearing solution

PHA1 Loop1 Phase correction factor calc from phases.txt

PHA2 Loop2 Phase correction factor calc from phases.txt

AMP1 Loop1 Amplitude Factor.

AMP2 Loop2 Amplitude Factor.

R13M Loop1/Monopole relative signal voltage squared like you'd see in an antenna pattern.

R13A Loop1/Monopole relative phase like you'd see in an antenna pattern.

R23M Loop2/Monopole relative signal voltage squared like you'd see in an antenna pattern.

R23A Loop2/Monopole relative phase in degrees like you'd see in an antenna pattern.

TYRS Year of measurement date.

TMOS Month of measurement date.

TDAY Day of measurement date.

THRS Hour of measurement date.

TMIN Minute of measurement date.

TSEC Second of measurement date.

Ideal pattern bearing determination uses configuration file Phases.txt along with an average of amplitude history and amplitude factors from current CSS or possibly force amplitudes if AnalysisOptions.txt/Header.txt files are set to use forced amplitudes.

Measured pattern bearing determination uses the configuration file MeasPattern.txt and possibly averaged history amplitude factors if AnalysisOptions is set to have amplitudes follow sea-echo or possibly force amplitudes if AnalysisOptions.txt/Header.txt files are set to use forced amplitudes.

Note that MeasPattern.txt often does not cover 360 degrees, so it's possible the spectra point of interest can be outside the pattern coverage sector and bearing result will either be pegged to one edge of the pattern or possibly misplaced.

Revision History

First Draft Oct 28, 2016

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