



Logging and Processing Environmental and Water Quality Data in HYPACK

By Boris Schulze

HYPACK® acquires and processes hydrographic and bathymetric data; all of you are aware of that. But did you know that it can do more than this—logging environmental and water quality data? Since 2017, we could log data from YSI sensors like the EXO sonde. This is done with the EXO driver and was described in an earlier article. But now we can log any data that you want—as long as it is ASCII—whether temperature, wind speed or water quality data.

LOGGING THE DATA WITH THE GENDEVPARSE DRIVER

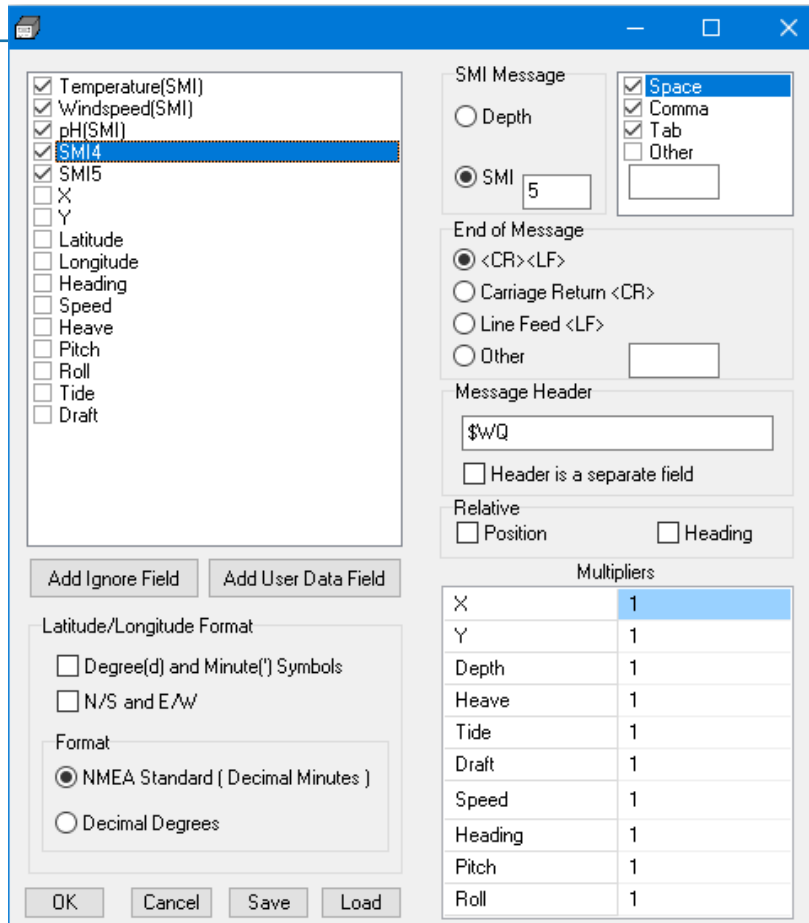
There is a (very powerful) driver in HYPACK® called the “Generic Input Parser” (gendevparse.dll). This driver allows you to log any kind of data.

GenDevParse Driver Setup

In the Setup of this driver, there is a field called SMI; this stands for “Specialized Marine Instrument”. You have to define how many records are coming in on your port. In the following image, I have selected 5 SMI records. A right-click on the SMI allows you to change the name for the record. You can setup a message header and configure the driver, so it matches your data string.

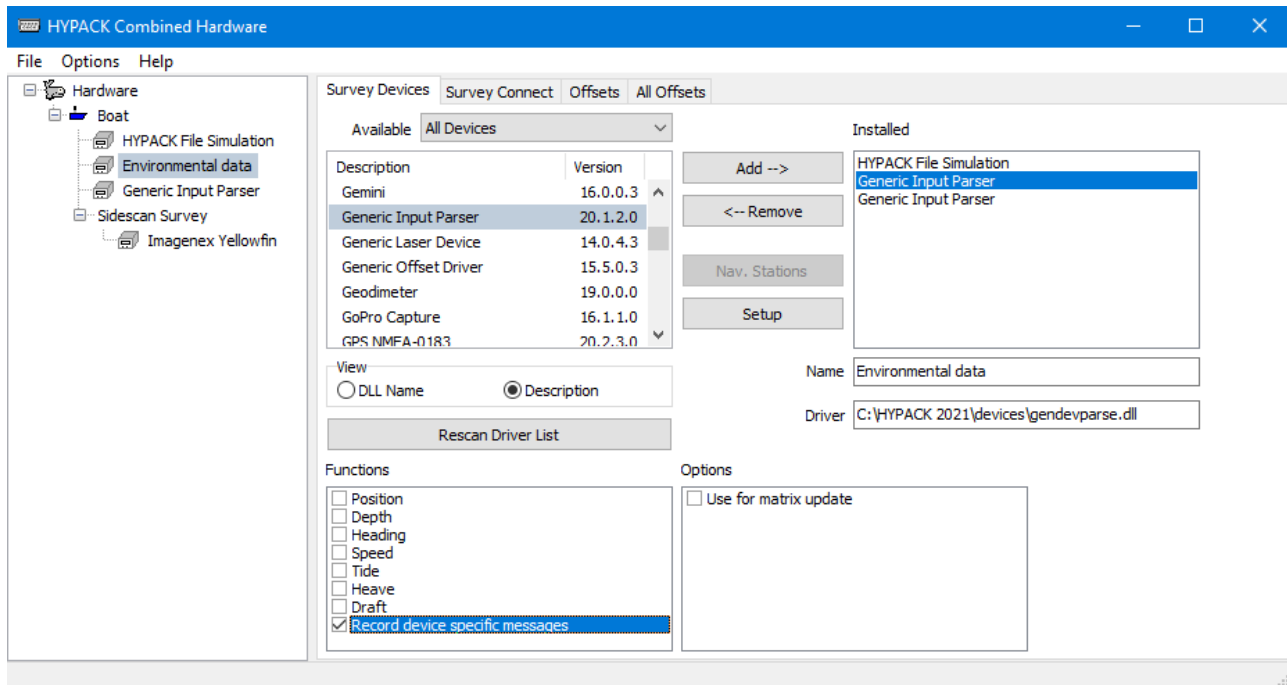
Once done with the driver setup, remember to click [Save] as it will save the setup of your driver!

If you have several sensors connected on different ports, simply add the driver a second or third time, matching the number of instruments sending data.



Lastly, select only the “Record device specific messages” function.

GenDevParse Device Functions



Now you are ready to record the data from your sensors. The following picture shows how the data is logged as an SMI device in a *.raw file.

Sample Raw Data File with SMI Data

```

11 OFF 0 0.000 0.000 0.000 0.000 0.000 0.000 0.000
12 PRD 0 KTD "" "" ""
13 DDT 0 SYN KTC
14 DEV 1 32784 "XLI" 524288 C:\HYPACK 2020\devices\XLI.dll 20.10.0.41
15 OFF 1 0.000 0.000 0.000 0.000 0.000 0.000 0.000
16 PRD 1 SMI Receiver Frequency
17 PRD 1 SMI Proximity
18 PRD 1 SMI Distance Measurement
19 PRD 1 SMI Current Measurement
20 PRD 1 SMI BC Signal Strength
21 PRD 1 SMI BC Polar
22 PRD 1 SMI BC Azimuth
23 PRD 1 SMI TC Signal Strength
24 PRD 1 SMI TC Polar
25 PRD 1 SMI TC Azimuth
26 PRD 1 SMI Gradient
27 DDT 1 SMI
28 FIL "RAW" "San Bernard River.lnw"
29 LIN 2
30 PTS 788854.32 10550758.58
31 PTS 789848.31 10549772.70
32 LBP 788854.32 10550758.58
33 LNN 2+50
34 EOL
35 USR "HYPACK " "HYPACK " 0x80000011 15690507
36 EOH 4F17C89E34794273D7C1DAA7B67A4C66C71F067362807ECAE174AA7CA903C3DC965276B993D2210BA2!
37 SMI 1 53728.503 11 100 495 -32716 856 670656 851 489 672288 835 1758 1415
38 SMI 1 53728.508 11 100 495 -32716 856 670656 851 489 672288 835 1758 1415
39 SMI 1 53728.509 11 100 495 -32716 856 670656 851 489 672288 835 1758 1415
40 SMI 1 53728.524 11 100 495 -32716 856 670656 851 489 672288 835 1758 1415
41 SMI 1 53728.540 11 100 495 -32716 856 670656 851 489 672288 835 1758 1415
42 MSG 0 53728.470 $GPGSA,A,3,01,03,10,11,,20,21,22,23,25,26,44,1.1,0.8,0.8*32

```

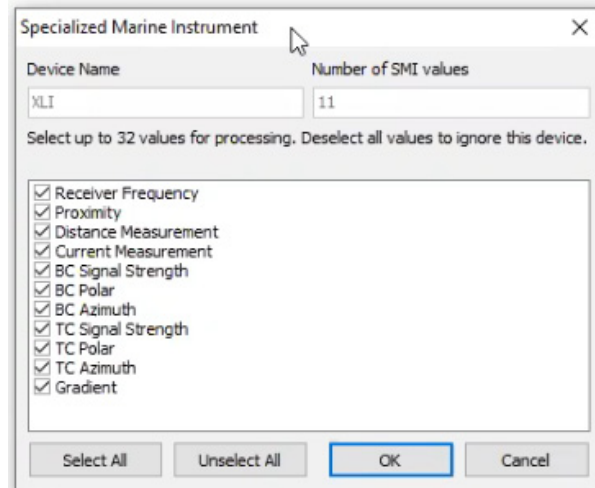
PROCESSING SMI DATA

Processing the data can be done using our new ENVIRONMENTAL EDITOR. (Select PROCESSING-ENVIRONMENTAL EDITOR.)

ENVIRONMENTAL EDITOR

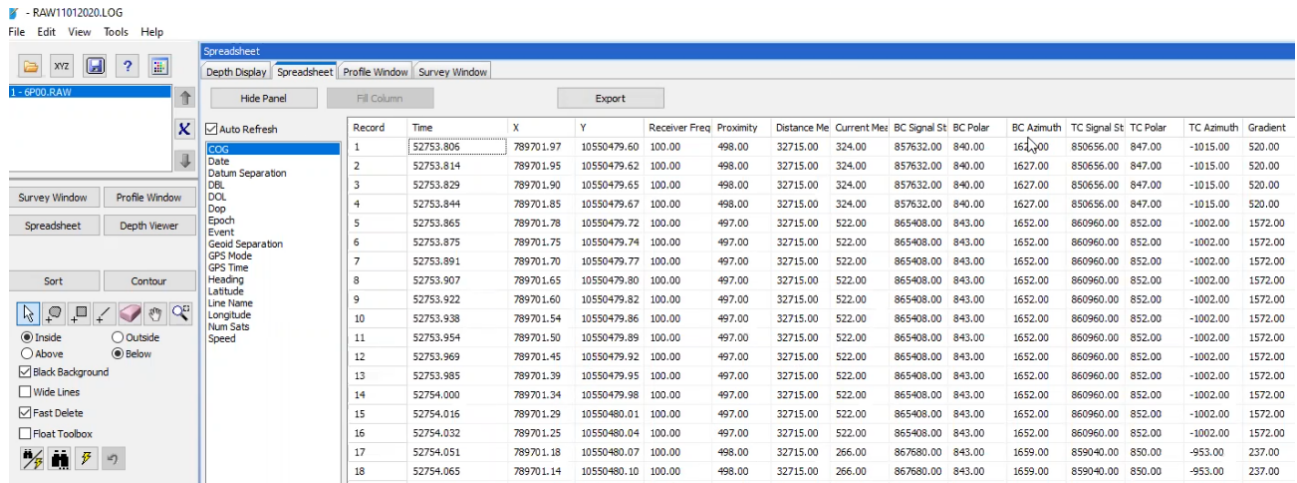
Once a LOG or RAW file is selected, a window pops up showing you the SMI records that you setup in the driver (Figure 1) and that were recorded in SURVEY (Figure 3).

Sample SMI Dialog



When the files are loaded, you will see the SMI data that you recorded in the spreadsheet.

Spreadsheet

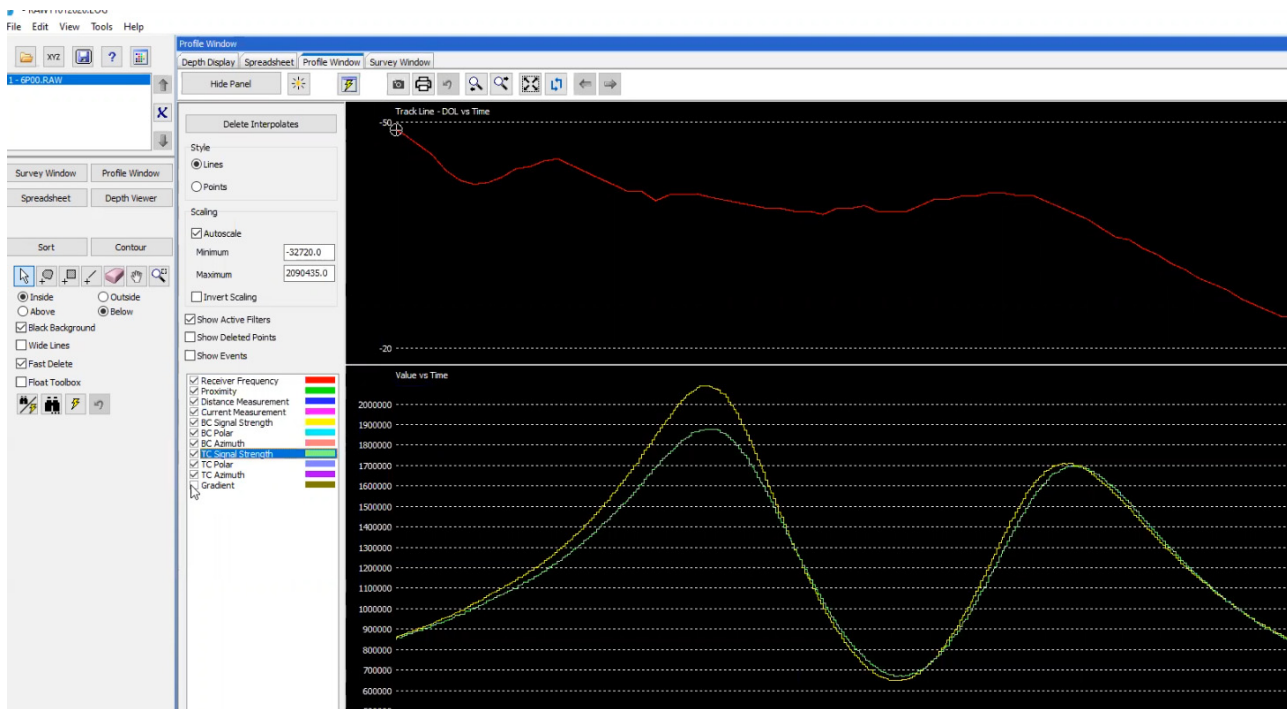


REMOVING DATA SPIKES

Now you can use the editor to display the data, clean it and so on, just like the SINGLE BEAM EDITOR.

A nice feature here is the “Delete Interpolates” option, which allows you to delete spikes and interpolate between the points.

Editing your Data in the ENVIRONMENTAL EDITOR



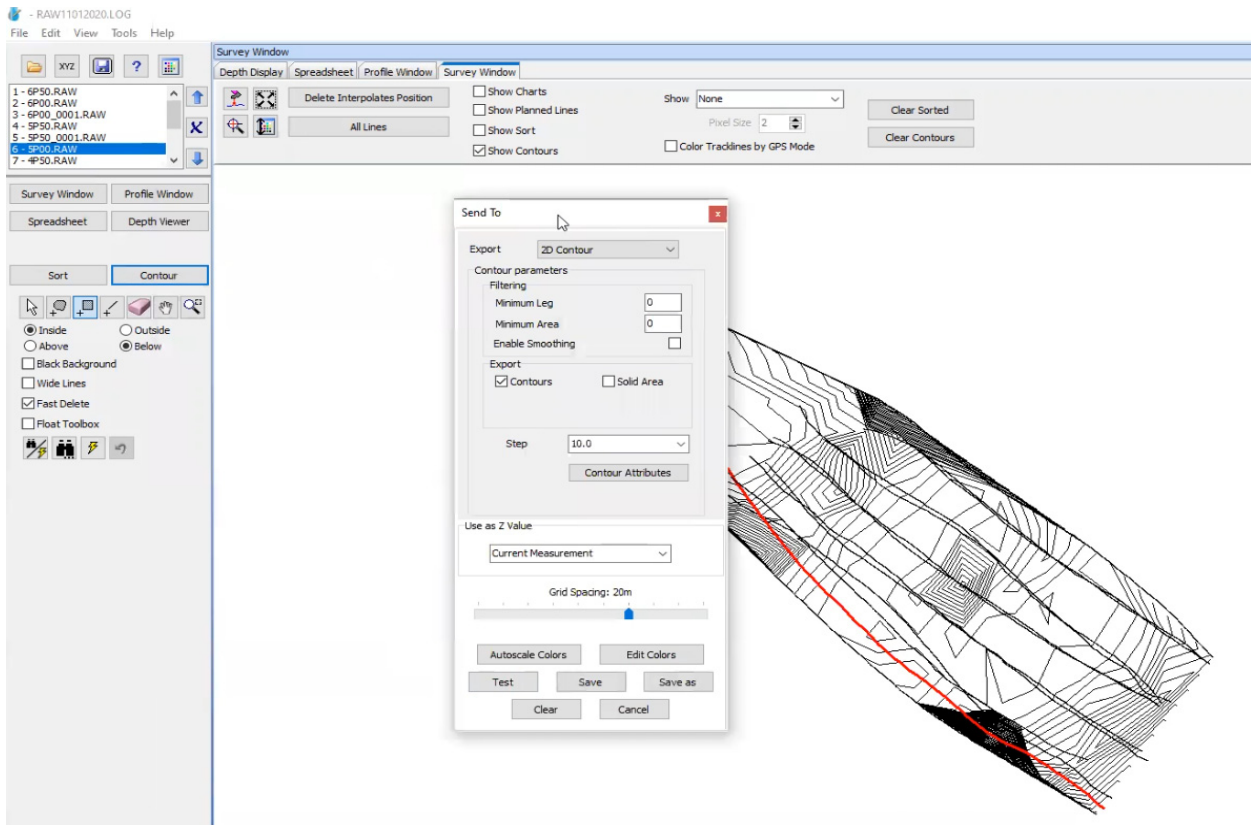
EXPORT DXF CONTOURS

The program even allows you to contour the data from the program interface—no leaving the editor to go to TIN MODEL.

1. Click **[Contour]** to display the contour options.
2. Select the data to be contoured and set the contour steps.
3. Click **[Test]** to display the contours.

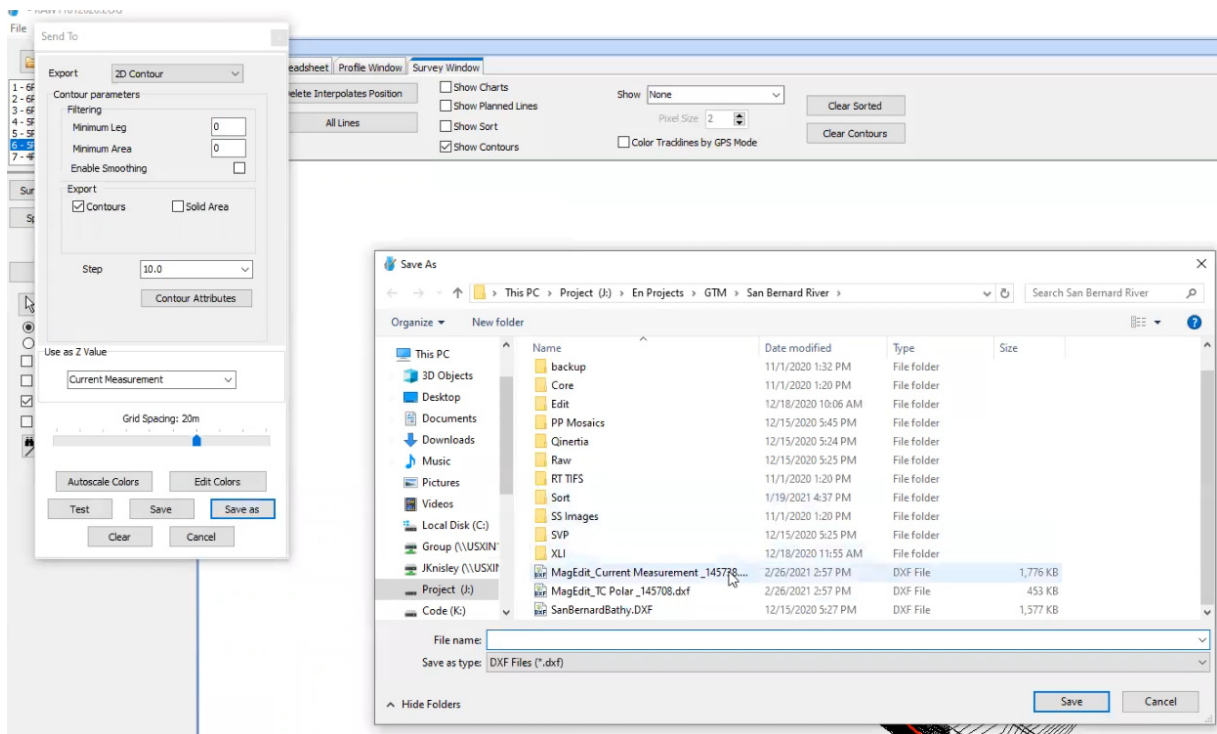
Tip: Uncheck the Black Background option to better see the contours.

Sample Contours



4. **Save the contours as a DXF file.** If you do this for every data type logged, you have several DXF files showing the contours of the data.

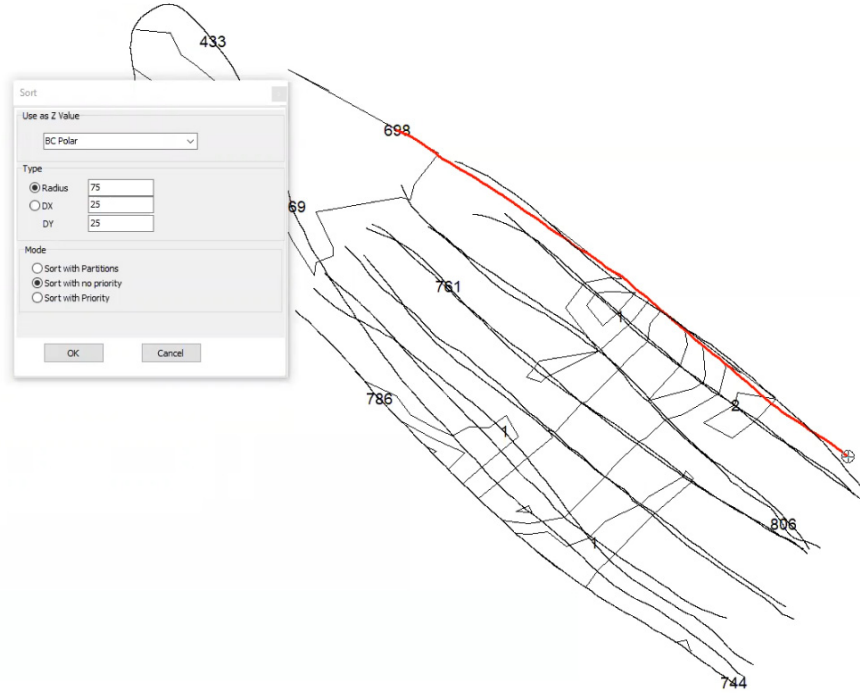
Saving a Contour File for the Selected SMI Value



EXPORT TO XYZ

It is also possible to export the data as XYZ using the “Sort” button in the program. When you click ok it shows you the data in the Survey Window and automatically generates an XYZ file of the data selected and stores them in the “Sort” directory.

Sorting your Data



We will work on this new editor in the near future with more functionality and more features.

Stay healthy!

Boris

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