TD 311 USER MANUAL DataStudio 3D April 2016



DATASTUDIO 3D Post-processing software



Preliminary Edition 5th of April 2016

TABLE OF CONTENT

Introduction	1
1.1 About this version	1
1.2 What can you do with this version (1.5.3.871) of Aanderaa DataStudio 3D	1
Getting started	5
2.1 Installation	5
2.2 Import a New Data Set	5
2.3 Setup before plotting	7
Plotting and data analysis1	L
3.1 Line graph configuration13	3
3.2 Contour plot configuration	5
3.3 Surface plots configuration	
3.4 Scatter plot configuration1	
3.5 Configuring Progressive Vector Diagrams (PVD)18	3
Exporting data to csv and importing into Excel)
4.1 Data Export)
4.2 Data import with Mac 22	L
4.3 Import data into Excel with a PC 23	3
APPENDIX 1: Quality Control and data interpretation 24	1

Introduction

This manual describes the use of the Aanderaa DataStudio 3D software, which is a post processing software intended for quality control, data visualization, analyzing and export of data to other formats.

Aanderaa DataStudio 3D has a modular build-up that makes it possible to add new functions and capabilities in the future.

This software is designed to handle and process data from all newest instrument/data loggers from Aanderaa. At this time the software is intended to be used with the SeaGuardII platform and is the only post-processing software able to handle data from the DCPS, the newest Doppler Current Profiler from Aanderaa.

Aanderaa DataStudio 3D is inspired from the RDCP Studio offering additional capabilities, flexibility with improved graphics and modern design.

1.1 About this version

- Version: 1.5.3.871
- Works on: Windows 7, 8 and 10
- Instruments: SeaGuardII DCP, Doppler Current Profiler Sensor, RCM Blue, SmarGuard

1.2 What can you do with this version (1.5.3.871) of Aanderaa DataStudio 3D

- Import recorded data from a SD card of SeaGuardII or SmartGuard platform. Data only needs to be imported once as DataStudio 3D will create a project
- List the connected sensor
- Include a detailed map of the deployment site
- Limit the graphical presentations of all the data to periods of interest (e.g. when the instrument was in water/on the bottom). This step is fully reversible and can be changed any time during the data analysis process. When changing the selection in time, all produced data wil automatically be updated.
- Limit the graphical presentation of data from the Doppler Current Profiling Sensor (DCPS) to depths sections at which the quality is judged to be good. Changing the selection of cells will also automatically update the concerned produced graphs.
- Produce multiparameter, multiscale and multicolor plots of the recorded data. Different graphical options include: Line, Contour, Progressive Vector, Surface and Scatter plots
- All graphs and settings are saved and can be reopened and modified the next time the software is used
- Easy adjustment of existing plots and graphs
- Export data in csv format for further treatment with other software

Getting started

2.1 Installation

From the installation folder (downloaded, on CD/USB) click on *AADI.DataStudio3D* or *setup* and follow the instructions for installing new software on your computer.

Depending on the Windows version you use the software might require download of SQL data base software (free).

It is recommended to stay connected to the Internet when the installation is carried out.



2.2 Import a New Data Set

To launch the program double-click on the Datastudio3D symbol in your list of programs or on the shortcut on your desktop.



From the start menu click on *create new project* and fill out the name and description (1). Then *click on create new project* (2).

🐠 datastudio 3d	Settings Help _ 🗖 🗙
Recent projects	Name:
	Example data
	Description:
	Example data from Norweian fjort
	1. Thir dut project related information
	create new project cancel
	2. Click on create new project
~	
create new project	
import project	
export project	
exit datastudio 3d	

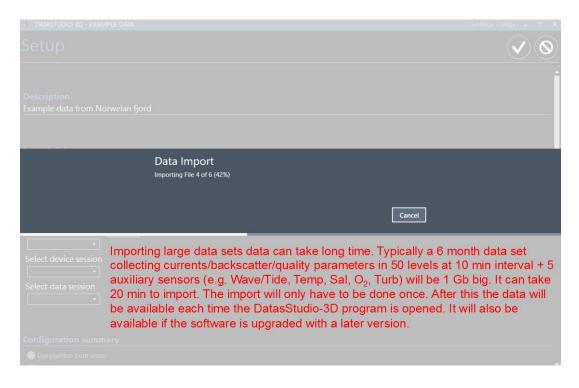
Click on **BROWSE FOR FILES** (1)

🔦 DATASTUDIO 3D - EXAMPLE DATA	
Setup	$\mathbf{\mathbf{V}}$
Description Example data from Norweian fjord Import data	
import data	
BROWS	e FOR FILES
Select data source	
Select device <u>Node list</u> Select device session	1. Click on BROWSE FOR FILES
· · ·	
Select data session	
Configuration summary	
Use position from sensor	

Find and open the raw data folder (1) that was downloaded from the instrument SD card or from the demo data available under; Documents/Aanderaa/DataStudio3D/TestData. Mark all the raw data files (2) and press *Open (3).*

🐓 DATASTUDIO 3D - EXAI	MPLE DATA			Settings H	lelp 🗕 🗖
ins	Find and open the raw data file d trument. The file contains the pro rial number (1435) and the time a	duct number a	of the instrument (56		v ®
Description Example data from N	orweian fjord	<u>\</u>			
Import data					
	BRO	WSE FOR FILES			
2. Mark all 1 Select data source	he raw data files in this folder	★ Open ← → ★ ↑ ▲ « Data » sanize ★ New folder	5650H-1495-0-2015-10-17T v C	Search 5650H-149	× 95-0-2015-10 p
Select device	Node list	a time	^ Date modified	Туре	Size
		Data000.bin	2015-11-02 19:00	BIN File	9 998 KB
	3. Press Open and wait	Data001.bin	2015-11-18 21:00	BIN File	9 999 KB
Select device session		Ca. 002.bin	2015-12-04 23:00	BIN File	10 000 KB
	depending on computer	Data003.bin	2015-12-21 00:30 2016-01-06-02:00	BIN File BIN File	9 990 KB
Select data session	speed & number of files this	Data004.bin	2016-01-08 02:00	BIN File	4 723 KB
	can take many minutes. An			Contrac	
	indicator will show progress	₽ ✓ < File name:	"Data005.bin" "Data000.bin" Data001.bin" "	Binary Xml Files	> ~
Configuration summ	nary			Open	Cancel
O Use position from sens					
ose position nom sens					

The data will be imported, the progress can be followed on the screen. Large data sets will take time. Data need to be imported only once and will be part of the project.



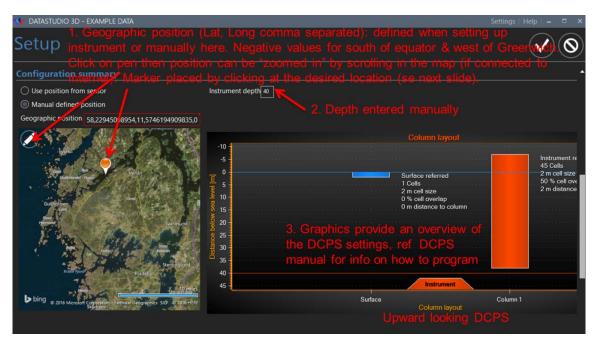
2.3 Setup before plotting

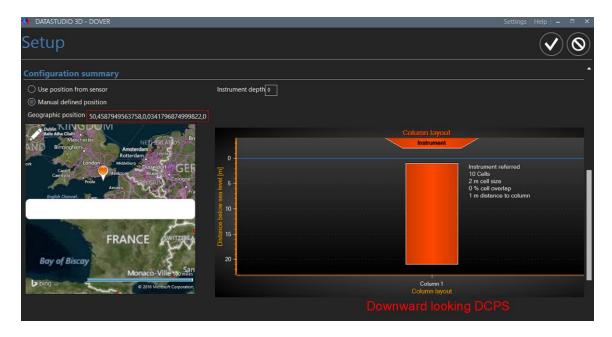
After the data has been imported a summary of the instrument set-up and representative plots will be available by scrolling down. First is the instrument (type, model-and serial number), the list of connected sensors/nodes (type, model- and serial number). Note that Aanderaa platforms are multi-parameter and numerous sensors can be plug-and-play connected (e.g. strings). *Scroll down the Node list* to see all the active sensors.

🔦 DATASTUDIO 3D - EXAMPLE DATA		Settings Help 🗕 🗖 🗙
Setup		\checkmark
Import data	BROWSE FOR FILES	O_Temp Cond/Temp O_Temp Cond/Temp O_Temp O_Temp O_Temp Cond/Temp O_Temp O_Temp
Select device Seaguard II DCP 5650H #1495 Select device session Seaguard II Platform Date: 2015-08-30 00:17:50 • Select data session Records 4207 Start 2015-10-17 17:30:00 Stop 2016-01-13 08:30:00	Node list Wave And Tide Sensor - 5218A #135 Conductivity Sensor - 4319 #1133 Optode Sensor - 4835 #386 Doppler Current Profiler Sensor - 5400	Example of a SeaGuard string #12 • system laid out on deck
Configuration summary Use position from sensor Manual defined position Geographic position	Instrument depth	Column layout

Scroll down to see Doppler Current Profiler Sensor set-up and to obtain/add geographical position and/or depth (1,2). If you had entered the geographical position into the instrument before deployment it will be available for use or you can click and scroll up/down to zoom in/out in the map and select the correct position manually. Please note that to have access to high resolution map the computer should be connected to Internet.

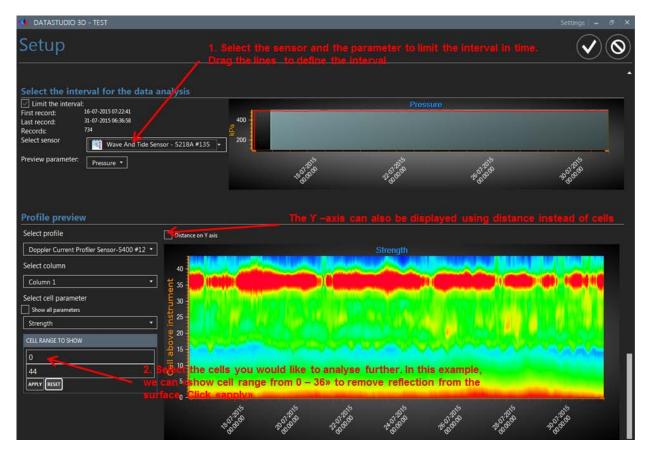
Depth can be obtained by looking at the deployment pressure or by finding the reflexion from the surface if the instrument is upward looking.





Scroll further down to the bottom of the page. A two-step graphical selection is done of which data should be included in graphs and for data export. Note that this step is fully reversible and the unused data will not be erased. (1) Make a selection in time based on available data from the instrument as for i.e. Cond, Temp or Pressure data. Click in the figure and drag the shaded marking/lines.

For the profile preview; As default Speed, Signal Strength and/or Speed Standard Deviation is used to select which acoustic profiling data (from the DCPS sensor) should be included **(2)** by selecting the cell to show further.



Press ✓ on the right top corner when Setup is finished.

In the example below Pressure and Signal Strength are used as the two criteria to limit the selection of data to be used in the graphical presentations.

💊 DATASTUDIO 3D - KOLJOE FJORD						Setting	gs Help 🗕 🗆 🗙
Setup							\checkmark
Limit the interval:	400 200						
Preview parameter: Pressure 👻	11012010	2401200	31012010	STORAD	1408-2015	2108,2015	2-Band
Profile preview							
Select profile Distance on Y axis							
Doppler Current Profiler Sensor-5400 #12 *			Streng	gth			
Column 1			Ormeter Di				
Select cell parameter 5 3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5		Strong ha	aloclino	araat.			A AVAN
Strength 25		with inter	nal wave		ANNI LUL	يه والمحيد	1.0.0
CELL RANGE TO SHOW		with filter			4	umanna	Manage And
0 15			West west	CARLENA			
44 APPRY NSST 5							A MARKED
		alter alter a					
TATAS	2401200	21-07-00-0	S. B. B.	100 14	18 ALA	2108/2015	Baran

The selected settings will be applied and remembered for the further analysis of the data set. You can always go back and modify the set-up. After saving the Setup you will be directed to a page in which you can start to make graphical presentations or export data.

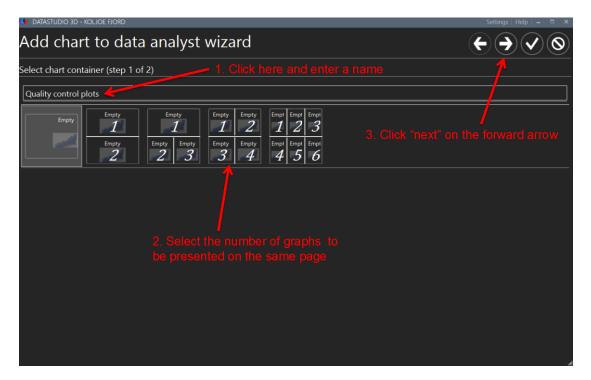
) - Koljoe Fjord							Settings	Help – 🗆 🗙
Setup									
Limit the interval First record: Last record: Records: Select sensor	17-07-2015 10:47:47 28-08-2015 06:54:20 2008		400			Pressure			
Preview parameter:	Wave And Tide Sensor - 5218A #1		110 ¹²⁰⁵	24.01,2015	3101205	1,450 +4500 1,500			Baran
Profile preview									
Select profile		Distance on Y axis							
Doppler Current Pr	ofiler Sensor-5400 #12 🔹					jth			
Select column		E 35	Sand And And		MANANA MA	A ANN W	VIV Weber		
Column 1	•	te 30							
Select cell parameter	er	0 30 - E		. 6. 7 1 1 W	N.669.18.1	n Martin I			
Show all parameters	<u> </u>	125 -		Strong ha	alocline 🕳	11111		AND ADDRESS OF 18	
Strength	•	ü 20			nal wave				and the second second
CELL RANGE TO SHOW		9 20 1 9 00 15				wwww			
0		e							
35		Distance of the second						and the state of the	ALC: NO.
APPLY		5 Dist							
		-	12	15		0	19	12	
			A01.20	1.01.00	Jos an	, e	10 A A A	100 BO	28 A.A.A
			1.90	,0,	0.00		<i>\$</i> .	1.00	1.90

Plotting and data analysis

Click Add page + (1) to start making plots.

🐠 datastudio 3d - Koljof	FJORD	Settings	Help	- 0	×
Pages					
Add page 🕂	1. Click + to start producing data plots				
data analysis export data close project					

You can now select the number of graphs to be presented on the same page. *Give the new page a name* (1). *Click to select the number of graphs* (2). *Click on the forward arrow* (3).



You have 5 different graph options (Contour, Line, Surface, Progressive Vector and ScatterPolar). *Drag the type of graph you would like to have into empty slots* (1). Press ✓ (2) when finished.

A DATASTUDIO 3D - KOLJOE FJORD	Settings Help 🗕 🗖 🗙
Add chart to data analyst wizard	$\epsilon \rightarrow \checkmark \otimes$
Select chart types (2 of 2)	↑
Empty Contour LinePlot Surface ProgressiveVector ScatterPolar	2. Click here
Pick a chart item and insert it into the chart container below	
1. Drag the type of graph you would like to select into the empty positions	

All graphs are configured in the same way by holding the cursor above the graph.



5 options appear:

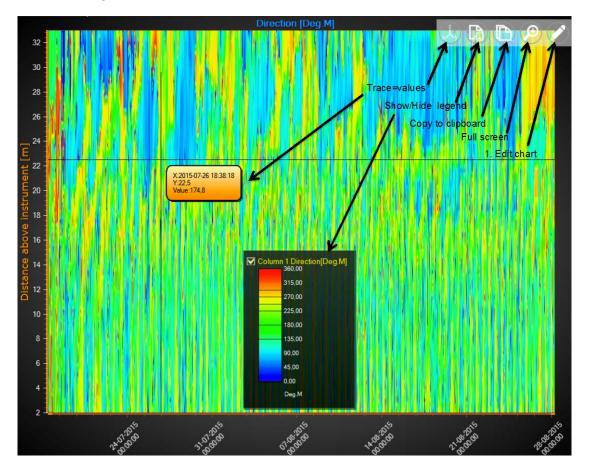
Trace=lists values and permits to scroll over plots and line graphs to see individual values (see below),

Show/Hide legend,

Copy to clipboard for pasting into documents as a picture,

Full screen and

Edit Chart (the pen) to edit the Chart settings (see below for detailed instructions on how to set-up the different graphs).



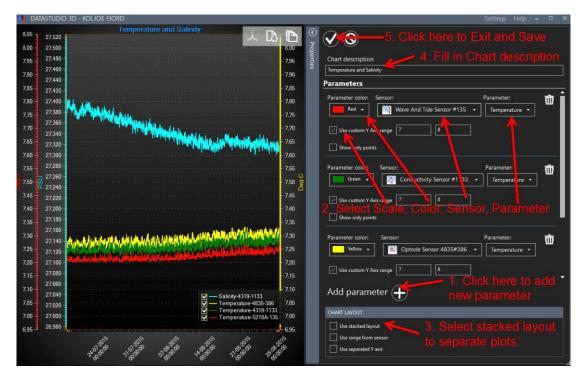
For all graphics type; To zoom in the graph, place the cursor on the graph, click left on the mouse while dragging down to the right. To zoom out, click left while dragging up to the left.

3.1 Line graph configuration

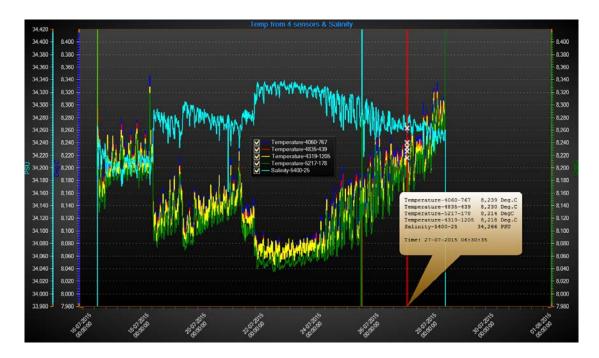
Once you have selected the line graph in your page configuration, click on the pen to edit the chart:

🔨 DATASTUDIO 3D - TEST	Setting	js∣ _ ₽ ×
40000 T		
35000	Prop	
30000	Chart descriptio	
25000	Parameters	
20000		
15000		
10000 -		
5000		
0		
-5000	••••••	
10000	······	
15000	······	
20000	Add param	neter 🕂
-25000	CHART LAYOUT	
.30000 I	S the	iyout
	Use range from	
o Bago	Use separated	

You can vizualise from one to ten parameters on one chart; follow the steps below to create your chart.

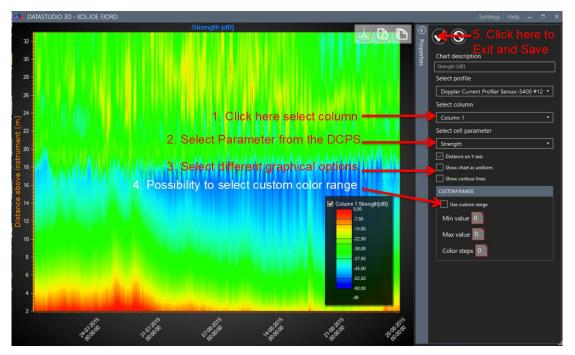


Below is an example of a full screen copy of a Line graph with the Trace function active. Use "Copy graph to Clipboard" symbol and paste into desired document if needed.

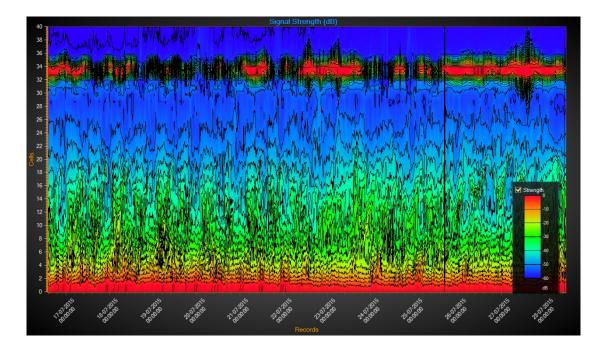


3.2 Contour plot configuration

Contour plots are available for multilevel data as from the Doppler Current Profiler Sensor (DCPS). Follow the steps as shows below to create your contour plot chart:



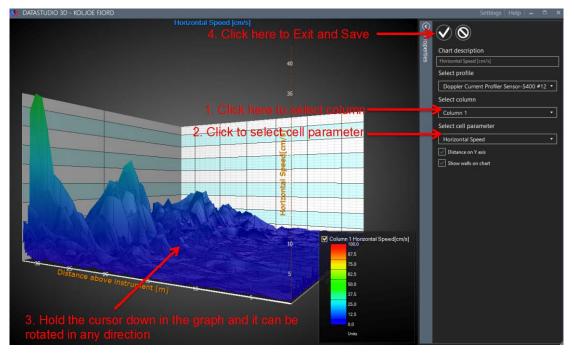
Below is an example of a full screen copy of a Contour plot selecting the option "Show contour lines". Use "Copy graph to Clipboard" symbol and paste into desired document.



3.3 Surface plots configuration

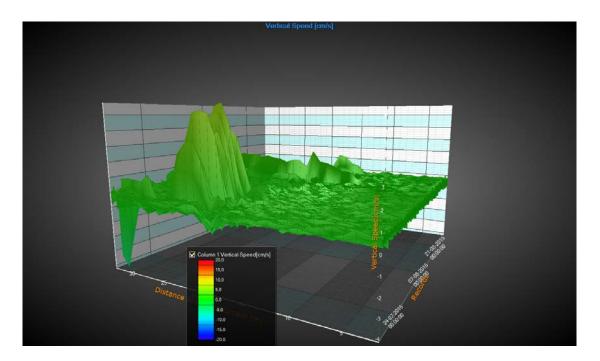
Surface plot is used to get a 3D overview of the multilevel data from the Doppler Current Profiler Sensor (DCPS).

By holding the cursor down in the graph it can be rotated in space. These graphs cannot be zoomed.



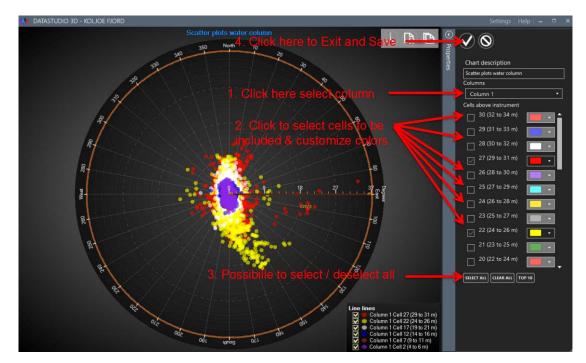
To create a surface plot:

Below is an example of a full screen copy of a Surface plot of vertical currents. Use "Copy graph to Clipboard" symbol and paste into the desired document.



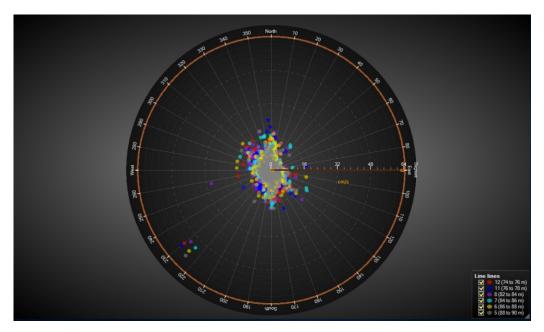
3.4 Scatter plot configuration

Scatter plots are available for multilevel current speed and direction data from the Doppler Current Profiler Sensor (DCPS). Each dot is a unique measurement in time of currents speed and direction. These plots can be a useful step in the quality control. Unless measuring in a river with a constant flow in one direction the plot should "pass through" the middle (origin).



To create a scatter plot:

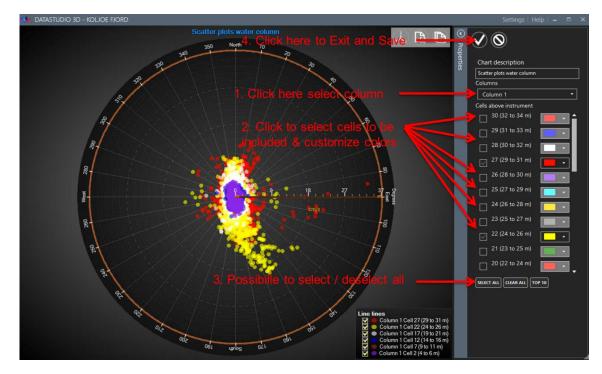
Below is an example of a full screen copy of Scatter plot. Use "Copy graph to Clipboard" and paste into desired document.



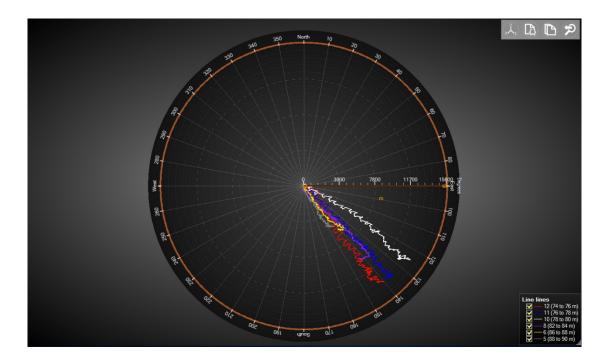
3.5 Configuring Progressive Vector Diagrams (PVD)

Progressive Vector Diagrams are available for multilevel current speed and direction data from the Doppler Current Profiler Sensor (DCPS). Each line is a consecutive continuation of a unique speed and direction measurement. The PVD shows how water has been flowing past the instrument. If the site is influenced by tidal movements these are often visible as ellipses.

To create a PVD plot:



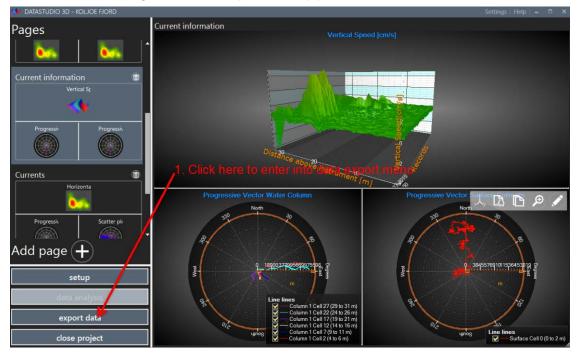
Below is an example of a full screen copy of Scatter plot. Use "Copy graph to Clipboard" and paste into desired document.



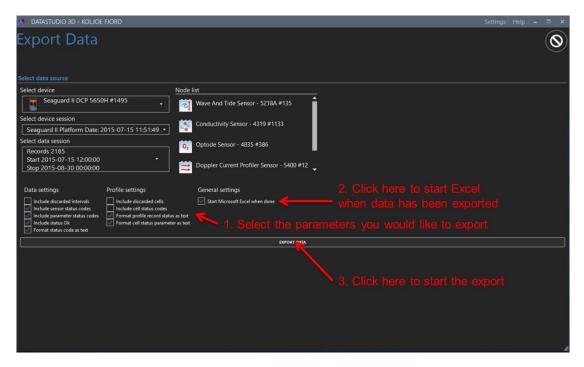
Exporting data to csv and importing into Excel

4.1 Data Export

Data can be exported for use by other software. The exporting format is semicolon separated csv. From main data page **Click on** *export data* (1).



From the export menu select what you would like to export and click export. In the export menu, you can select or not status code, discarded cells, etc:



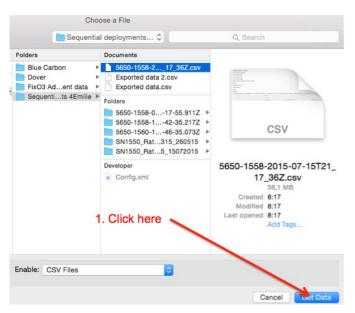
For i.e.: if your data record has about 3000 recordings (125 days deployment at 1 h interval) with 5 single point sensors and a Doppler Current Profiler Sensor (DCPS) set up to record in 50 cells the exported csv file will be around 100 Mb if you export everything. If you exclude the status parameter, the size will be about 60 Mb.

4.2 Data import with Mac

To import a csv file into Excel (Excel 2011) open a new workbook and **click** on **Import...(1)**, **"check"** CSV (2) and **click** on **Import (3)** to find the csv file to import.

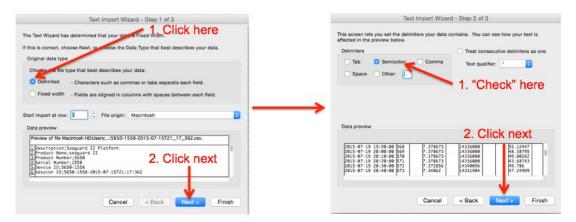
E 61	0.01	1.10	ie in	port c	omu	and	IS IOC	aled	under						Q		
Home	Layout	Tables	Chart			mulas		Review							120		
Edit	Layout	Tables	Fant	a omariya	1 1 1 10		onment	PLOVIEW	N	umber			Format.		Cela		
- III R	· Cali	bri (Body)	+ 12	• A• A•	-		bc - =	Wrap Text +	General		-	20	Normal	1 8	L. The	1111	Aa
00	lear - B	IU	(Inda)		I man i a				000 - 06	. 0.0	00 Conditi		Bad	•			
				· 4				Merge -	. 70	3 00	6.0 Format		040		nsert Delete	Format	Then
A1	: ©	0 (- J	× D	E	F	6	Н	1.1	1 1	~	1 1	м	N	0	P	0	5
	D.	6	U	E.					1	<u>n</u> .	h.			0	6	N.	
						-											
							Imp	ort									
			-														
				What type of file	e do you w	ant to impor	t?							-			
	1000		-	CSV file													
2. "C	heck	CSV	->		to home with		to long at the	ext files that	antola anoma								
		******		Most financ	ial institutio	ons offer this	s format for	saving accou	int activity.	ia-separates	Values.						
			-	FileMaker P	n databas												
						El transmissione	to import o	data from an .	fo5 or fo7 da	tabasa filo t	hat was			-			
			1.11					Il records in ti									
			1.1	specify.													
			-	HTML file										-			
				Select this f	ile type wh	en you want	t to import i	nformation fre	om an HTML f	lie on your o	omputer.				-		
														-			
				Text file													
				Select this f	ile type wh	en vou want	t to import t	ext files. This	s option work	s best for te	t files						
				that contain													
			-	More about how	v to import	data			Car	ncel	Import	-	3 (1	ick h	ere to	find	the
																	uie
				110000		1	1	100	1.	_	Concession of the local division of the loca		cev f	ile to	impo	rt	
													Ser .	10 10	mpo	1	
				-										-			
						-											
	-					-	-	_						-			
- I	() () () () () () () () () () () () () (heet1 +	-			-				Sum=0		•			-	10	





Click on *Delimited* (1) & *Next* (2)

Check Semicolon (1) & Click Next (2)



Follow the steps describe below (1-6) to finish importing data.

This screen lets you select each column and	Column data format	Advanced Text Import Settings						
set the Data Format.	General	Settings used to recognize numeric data						
'General' converts numeric values to numbers, date values to dates, and all remaining values	◯ Text	Decimal separator:						
to text.	Date: YMD	5. Click OK						
Advanced	O Do not import column (Skip)	Thousands separator:						
3. C	lick Advanced	Note: The settings above determine how Excel recognites numeric data when it is imported from a text file. After the						
1. For the first column select I	Date (YMD) format	text is imported, Excel displays the numbers based on the Numbers settings in the International System Preferences.						
	• •	Reset Cancel OK						
Data preview 2. For the rest "C	General" is preselected							
YMD <u>GenerGeneral 6</u> 2015-07-19 19:50:00 568 7.378673	enerGeneral GenerGeneral Gene 14336000 55-12447							
2015-07-19 20:00:00 569 7.378673 2015-07-19 20:10:00 570 7.378673	14336000 8.005 14336000 4.00262	 Select your Decimal separator. Look in document if comma or dot 						
2015-07-19 20:20:00 571 7.378673 2015-07-19 20:30:00 572 7.372856 2015-07-19 20:40:00 573 7.34862	14336000 43.68743 14340096 49.786 14331904 47.24999							
2013-07-19 20:40:00 575 7.54002	6. Click Finish & OK in next							
		menu & wait until data has been						
Cancel	< Back Next > Finis	imported						

Below data has been imported into Excel. Remember to save as an Excel file.

) 🛅 🗊 🖬 🕯	😸 🚲 🛍 🐔 🥌 📾	· (2) · Σ · 2	5 · F · 6		100% 🖷 🧕	2				Q- (Search in)	Sheet
A Home Lay	out Tables Charts	SmartArt Fo	rmulas Dat	ia i	Review						~
Edit	Font		Alignme	nt		Nun	04r	Format		Cells	Themes
Fil -	Calibri (Body) + 12 +	A* A* =	== abc *	120	Arap Text - General	d		Normal		Se. Se	Aa's. 22-
	and the second s		and the literal	and in				26	•		
este Clear •	BIU	* <u>A</u> * E	물 물 연물	2	Merge - 59 *	%	9 9.0 00 Con	ditional Bad matting		Insert Delete Format	Thomas Aa*
A1 :	\ominus 🔿 (= fx Description	1		and the second			and the second				
		c	D	1.6	1 6	G	н	1 1	1	1	K.
Description	Seaguard II Platform		0			0.					PS
Product Name	seaguard II										
Product Number	5650										
Serial Number	1558										
Device ID	5650-1558										
Session ID	5650-1558-2015-07-15T21:17:36Z										
Location											
Geographic Position											
Vertical Position											
Owner											
Reference											
		System Parameters					Analog Sensors #0				
8											
1											
Record Time	Record Number	Sensor Status	Input Voltage [V]	Status	Memory Used (Bytes)	Status	Sensor Status	Turbidity #14571 (FTU	1 Status		Chlorophyll #2103755 (ug/
2015-07-15 21:20	1		7.396122		13426688		(18) Parameter warni			rning, out of measurement range	1.824
2015-07-15 21:30	2 2		7,378673		14131200	1		0.0931059	1	••••	4,2582
2015-07-15 21:40	3		7,390306		14278656		(18) Parameter warni	ng -0.158652	5 (81) Wa	rning, out of measurement range	0.42605
2015-07-15 21:50	4		7,449441		14241792		(18) Parameter warni			ming, out of measurement range	0,42791
2015-07-15 22:00	5		7,437808		14245888		(18) Parameter warni			ming, out of measurement range	0.41159
2015-07-15 22:10	6		7,449441		14245888		(18) Parameter warni	ng -0.156164	9 (81) Wa	rning, out of measurement range	0,41279
2015-07-15 22:20	7		7,449441		14270464		(18) Parameter warni			rning, out of measurement range	0,4167
2015-07-15 22-30			7,473676		14282752		(18) Parameter warni			rning, out of measurement range	0.40732
2015-07-15 22:40			7,449441		14278656		(18) Parameter warni			rning, out of measurement range	0,42528
2015-07-15 22-50	10		7,449441		14241792		(18) Parameter warni			rning, out of measurement range	0,412
2015-07-15 23:00	11		7,449441		14245888		(18) Parameter warni			rning, out of measurement range	0,42953
2015-07-15 23:10	12		7,473676		14245888		(18) Parameter warni			rning, out of measurement range	0,41689
2015-07-15 23:20	13		7,48531		14245888		(18) Parameter warni			rning, out of measurement range	0,4184
2015-07-15 23:30	14		7,491126		14241792		(18) Parameter warni			rning, out of measurement range	0,42195
2015-07-15 23:40	15		7,48531		14241792		(18) Parameter warni			rning, out of measurement range	0,417640
2015-07-15 23:50	16		7,461074		14241792		(18) Parameter warni			ming, out of measurement range	0,414335
2015-07-16 0:00	17		7,431991		14233600		(18) Parameter warni			ming, out of measurement range	0.42286

4.3 Import data into Excel with a PC

View Processory Control Contro Control Control Control Control Control Control Control Control Co							*			_	_	Book1 - Micros	oft Excel												
Documents Multice Name Date modified Date modified Date modified Description Multice Interested 204.01512.02 204.01512.02 Interested	🕽 📲 🖡 PIM2 🔹 Si	eeGuerdEDCP + Cus	stomer support	• 47	111 Control of the	and an and the	100			1		Normal	Bad		Good	100	inteal	Calcula	tion -	-	-	E AutoSum	· Ar		e U a
Market Policy Cardie Data Market State Description Cardie Cardie <thcardie< th=""> Cardie Cardie<th></th><th></th><th></th><th></th><th></th><th>副, 7. 0</th><th>0</th><th>1.140</th><th></th><th></th><th>Fromat</th><th></th><th>1000000</th><th></th><th></th><th></th><th></th><th>A CONTRACTOR</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></thcardie<>						副, 7. 0	0	1.140			Fromat		1000000					A CONTRACTOR							
Index 		Name				Data modify	ed *			prmatting *	s Table *	Concernance of the second	- Color		the second s			(teore	1	1 200		CHEM +	Filter + Select	÷	
Bitestei • Mages under gegende • Mages • Mages under gegende • Mages		Ecuador				22.04.20151	2.30	Ber .		1	arean o			50/	tt .					-	Cetty	E.	sting	411	
Consult 1902/001201 Standard 0802/001201 Standard 0802/001201 Standard 0802/001201 Standard 1002/001201 Standard 1002/001201 <		🗼 Group 0 2014-0	7-03T12-10-002			27.03.2015.1	7:08																		
Company MR 0803/3913/26 K L M O P Q R S T U V W X Y Z AA AB J 1/2 MARCONDED 1/2 MARCONDED 1/2 MARCONDED V W X Y Z AA AB J 2 MARCONDED 1/2 MARCONDED 1/2 V W X Y Z AA AB J 2 MARCONDED 1/2 MARCONDED 1/2 V V V V V X Y Z AA AB J 2 MARCONDED 1/2 V <t< td=""><td>Videos</td><td>Helvor Mohn</td><td></td><td></td><td></td><td>08.03.2015 1</td><td>1.28</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	Videos	Helvor Mohn				08.03.2015 1	1.28																		
Company MR 0803/3913/26 K L M O P Q R S T U V W X Y Z AA AB J 1/2 MARCONDED 1/2 MARCONDED 1/2 MARCONDED V W X Y Z AA AB J 2 MARCONDED 1/2 MARCONDED 1/2 V W X Y Z AA AB J 2 MARCONDED 1/2 MARCONDED 1/2 V V V V V X Y Z AA AB J 2 MARCONDED 1/2 V <t< td=""><td></td><td>Image upgrade</td><td>62</td><td></td><td></td><td>18.02.2015 1</td><td>5.49</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>		Image upgrade	62			18.02.2015 1	5.49																		
La col fondi Per J'OCIS (D) Per J'OCIS (D) PE J'OCIS (D	Computer					08.03.2016.1	5.56	R:	1	M	1.0	N O	p.	Q.	BS.	5	Ť	0	V.	W	×	Y 2	AA	AB	AC.
a PC 2005(2) ↓ ↓ Ka g dam 1481.2001.20 Projici dam 4 Projici da																									
P Pog (G) Matkeewalk 940.02001327 amink dangewilk 0 Add Decempoint 0 Add Decempoint g Stock Holds Stock Holds 0 Add Decempoint P Boi (L) Matkeewalk 0 Add Decempoint P Boi (L) Stock Holds 0 Add Decempoint P Boi (L) Park Holds Type Monotone Lock Holds P Boi (L) Park Holds Type Monotone Lock Holds P Boi (L) Park Holds Type Monotone Lock Holds P Boi (L) Park Holds Type Monotone Lock Holds P Boi (L) Park Holds Type Monotone Lock Holds Park Holds Type Monotone Lock Holds Type Monotone Lock Holds Park Holds Type Monotone Lock Holds Type Monotone Lock Holds Park Holds Type Monotone Lock Holds Type Monotone Lock Holds Park Holds Type Monotone Lock Holds Type Monotone Lock Holds Park Holds Type Monotone Lock Holds Type Monotone Lock Holds Park Holds Type Monotone Lock Holds Type Monotone Lock Holds Park Holds Type Monotone Lock Holds Type Monotone Lock Holds Park Holds Type Monotone Lock Holds																									
emissionsing 0 Casetoch 0.11.2001504 existed 03 5 Scherer cognetic 0.2002504 EVEP (Names) 2 Scherer cognetic 0.2002504 Fefer (A) 2 Add Benzylini Contenter Intelling: 0 Type Nigoenth East Comments Spatiated Values File Fefer (A) 2 Add Benzylini Contenter Intelling: 0 Type Nigoenth East Comments Spatiated Values File Ferenare Add Benzylini Contenter Intelling: 0 Type Nigoenth East Comments Spatiated Values File																									
Fedded 00 Somer supported 140.2000 \$1.543 PDF (hipopage) Somer supported Somer supported PDF (hipopage) Mathematic supported Type (hipopage) PDF (hipopage) Somer supported Somer supported PDF (hipopage) Mathematic supported Type (hipopage)																									
PIPC (Noperative) State (Noperative) State (Noperative) (PAL/Note) Ballot Inservice) Type: Noperative Values Type: Noperative Values Dam: model(Not) Dam: model(Not) Dam: model(Not)																									
Felia (L) A ADI Breazylimi Convente Installer sign Type: Microsoft Excel Convente Separate Visions File Billorek (X) The modified (VIsions) Type: Microsoft Excel Convente Separate Visions File Data modified (VIsions) The modified (VIsions) Type: Microsoft Excel Convente Separate Visions File Fer name: All Files (VIsions) Type: Microsoft Excel Convente Separate Visions File																									
Balence (1)																									
Fite name • All Fites CC) •		AADI BinaryXm	il Converter Installer.zij	P Ty	pe: Microsoft	Excel Comma	Separated	Values File	1																
Ferance - JAffre (2)	Bibliotek (Qt) -	* *	2. M	50	IN: 10.9 MB																				
		and a							1																
	File nat	me		•	All Files (7.7)																				
				Teola +	Open 1	- Can	cel																		

Open Excel, click on file, Open and select the *csv file where previously saved. Select open.

Below data has been imported into Excel. Remember to save as an Excel file.

Hone		ron Page		Formular	Cata	Review	Wee	Devel		Accessed					5-07-15711-52-														
A Cut		Calibri		11 · A'	A* = a		2000 a	Wrep	ee-0 - 0	Gener	al /		1941	1998	Normal	Bad		Good	10	eutral	Calcul	ation		*	Σ.	éoSum • ,	7 8		
Copy -						-							Conditional	- 10		1000000		Sattare			- Annotation	9(100)	- 8	Delete Fo	1 () () () () () () () () () (s+.	ort & Find &		
J Format	Painter	873	1 1	- A- A	- 10.0	1 AL 1	课课	Merge	r & Center	· 9·	% *	24 .21	Formatting *		CheckCell	Explor	1000/y	Input	10	nked Cell	Note		z) misu	Delete Po	- 20		iter * Select		
Dipboant		-	Fort				Alignme	Int			Number						52	vier (Celly		Editio			
A1		e	fe D	escription																									
A	8	c	D	Ē	E.	G	8	Ĥ.	1	1	ж	1	M	1 9	N O	p	۵	R	5	T	U	V	W	X	y.	- 2	AA	AB	AC
scripticSe	eaguard I	Platform																											
oduct N Se	eaguard II	DCP																											
oduct N 56	650H																												
nal Nur	1495																												
vice ID 56	650H-1493	5																											
ssion IE Se	650H-1493	5-2015-07	15T11:5	51:49Z																									
cation																													
eographic	Position																												
ertical Pos	ition																												
wher																													
eference																													
		Wave And	Tide Se	ensor #135																									
ecord Tir Re					Tempera			wdata FSt		Rawdata			Presi Status		Level Status	Sign. Hei		Max Heig		Mean Pe		Peak Per		Energy			in Status	Steepness	
BRAMBYER	-40			171 OK	7.20723			235227 0		1.17E+0			MO1 OK		15744 OK		OK		O OK		0 OK		0 OK		0 OK		0 OK		OK
ensuren	41			034 OK	7.21069			234611 0		1.17E+0			7141 OK		93503 OK) OK		ОК		0 OK		0 OK		0 OK		0 OK		OK
******	42		493.32		7.21517			233620 O		1.17E+0			345 OK		.8974 OK		O OK		ОК		D OK		0 OK		0 OK		0 OK		OK
******	43			345 OK	7.20680			232472 0		1.17E+0			8985 OK		8541 OK		D OK		ОК		0 OK		0 OK		0 OK		0 OK		OK.
ABABAR	- 44			132 OK	7.20636			231422 0		1.176+03			1938 OK		81393 OK		OK		OK		D.OK		0.OK		0 OK		0 OK		OK
	45			193 OK	7.20730			230285 0		1.17E+0			0672 OK		77161 OK		3 OK		OK		0 OK		0 OK		0 OK		0 OK		OK
******	46			169 OK	7.20695			229363 O		1.17E+0			.707 OK		73587 OK		2 OK		D OK		0 OK		0 OK		0 OK		0.OK		OK
ensurver	47			187 OK	7.206			228975 0		1.17E+0			527 OK		72057 OK) OK		ООК		D OK		0 OK		0 OK		0 OK		OK
*****	48			589 OK	7.20808			229079 0		1.17E+0			5888 OK		72414 OK		3 OK		D OK		0 OK		0 OK		0 OK		0 OK		OK
*******	49		491.74		7.20704			229483 O		1.17E+0			7314 OK		73829 OK		OK		OK		0 OK		0 OK		0 OK		0 OK		OK
ANADARA	50		491.95		7.20549			230156 0		1.17E+0			916 OK		7641 OK		OK		D OK		0 OK		0 OK		0 OK		0 OK		OK
******	51			122 OK	7.21054			231048 0		1.17E+03			3272 OK		79743 OK		D OK		D OK		0 OK		0 OK		0 OK		0 OK		OK
	52			006 OK	7.21678			231979 0		1.17E+0			5878 OK		83324 OK		D OK		OK		D OK		0 OK		0 OK		0 OK		OK
******	53.			733 OK	7.2071			232966 0		1.17E+0			0582 OK		16993 OK		D OK		ОК		0 OK		0 OK		0 OK		0 OK		QK.
ana	54			776 OK	7.20320			233767 0		1.17E+0			1699 OK		10064 OK		OK		OK		0 OK		0 OK		0 OK		0 OK		OK
ununun	55			56 OK	7.20494			234493 O		1.17E+0			5404 OK		92768 OK		OK		OK		0 OK		0 OK		0 OK		0 OK		OK
******	56			851 OK	7.20511			235004 O		1.17E+03			8477 OK		94825 OK		OK		ОК		0 OK		0 OK		0 OK		0 OK		OK
******	57			387 OK	7.20388			235100 O		1.17E+0			8838 OK		95182 OK) OK		ОК		D OK		0 OK		0 OK		0 OK		OK
******	58			179 OK	7.20453			235078 0		1.175+03			8726 OK		95072 OK		OK		OK		0 OK		0 OK		0 OK		0 OK		OK
ana manana ma	59			205 OK	7.20501			235448 0		1.17E+0			.011 OK		16445 OK		OK		ОК		0 OK		0 OK		0 OK		0 OK		OK
	60			151 OK	7.2046			235790 0		1.17E+0			1543 OK		97868 OK) OK		ОК		0 OK		0 OK		0 OK		0 OK		OK
WARAUR	61			366 OK	7.21368			235480 O	ĸ	1.17E+03			1427 OK	18.9	96765 OK		D OK		D OK		0 OK		0 OK 0 OK		0 OK 0 OK		0 OK		OK OK
******	62			363 OK	7.21658			235214 O		1.17E+0			9383 OK		95731 OK		OK		D OK		0 OK								

APPENDIX 1: Quality Control and data interpretation

The below suggested combination of graphs and parameters is a possible first step of quality control (QC) for SeaGuardII data sets. Short comments about the data and quality control are written in the graphs and in the text.

OBS: If instrument is redeployed at the same site and depth shortly after recovery a continuation in the values from before recovery is expected. If this is not the case it could be attributed to e.g. fouling or a sensor problem.

Optical sensors (turbidity, chlorophyll, F-DOM, PAH) are the most fouling sensitive but can be protected with copper tape, wiper or UV light.

Cond sensors are moderately resistant to fouling. They normally drift low when affected. They can be antifouling protected with UV light. The correct functioning of Aanderaa sensors can be checked in air with resistor loops between deployments.

 O_2 optodes are relatively resistant to fouling and can be protected with copper tape around the sensor, except in front of the foil. They normally drift low when affected by fouling. Letting them log in air can check the correct functioning of the sensor at saturation. They should show around 100 % at sea level and 1013 mbar of air pressure.

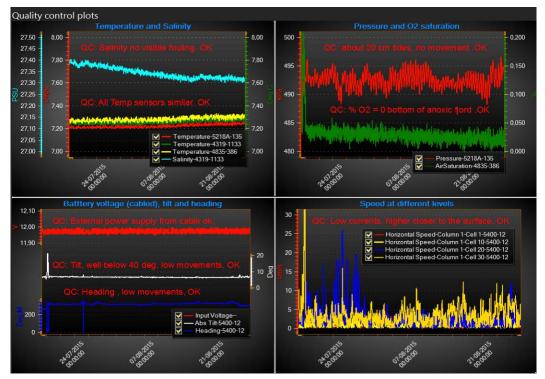
Pressure sensor have low fouling sensitivity and can be protected with Copper tape around the sensor and the black plastic multi-hole inlet, do not tape over the pressure inlet holes. Start sensor in air before and let it log in air before and after the deployment. It should show approximately atmospheric pressure at both occasions.

Doppler Current and Temperature sensors are normally not affected by fouling.

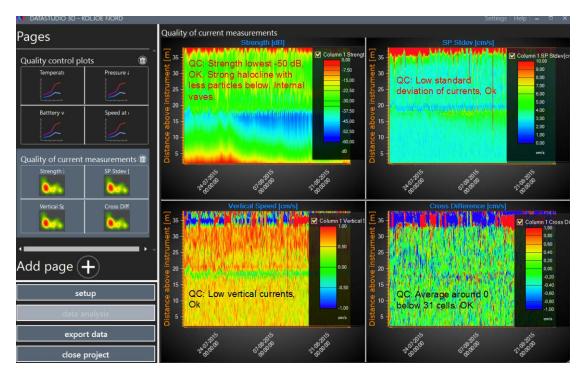
Below are two examples of line plots for quality control. Anderaa smart sensors are equipped with high quality temperature sensors (accuracy $\pm 0.03 \cdot 0.1^{\circ}$ C, sensor dependent) for compensation. All Temp sensors at the same levels should show the same values, within specifications:







The graphs below are for quality control of the Doppler Current Profiling Sensor (DCPS). If the signal strength (**Strength**) is low, normally further away from the sensor, and approaching -60 dB in combination with high standard deviation (**Sp Stdev**), noisy vertical currents (**Vertical Speed**) and high and noisy **Cross Difference** (CD = speed beam 1 – speed beam 3 + speed beam 2 – speed beam 4) this indicates that the instrument is measuring at the limit of its range. The standard deviation of currents (**Sp Stdev**) indicates turbulence and is typically higher close to the surface where there is waves and close to the bottom because of friction against the bottom. The magnitude of vertical currents (**Vertical Speed**) is typically about 10 times lower than for horizontal. Higher vertical currents could indicate up/down-welling of water and/or migration of fauna, e.g. fish and zooplankton. A Cross Difference of high amplitude could indicate that there is disturbance in one or several of the beams. In this case the unique possibilities of the DCPS to use 3-beams instead of 4 to do the current calculations could be utilized.



Aanderaa Data Instruments AS P.O.Box 103 Midtun, Sanddalsringen 5b, N-5828 Bergen, Norway Tel: +47 55 60 48 00 Fax: +47 55 60 48 01 email: aanderaa.info@xyleminc.com - www.aanderaa.com

Aanderaa Data Instruments AS is a trademark of Xylem Inc. or one of its subsidiaries.

© 2011 Xylem, Inc. July 2015

