

## **UCTD Sound Speed**

This guide provides instructions on how to derive sound speed profiles from UCTD data using Sea-Bird's SBE Data Processing software.

## 1. Importing UCTD data

First, the UCTD data needs to be imported into the software. After starting the application, choose the **ASCII In...** menu item on the **Run** tab and follow

**Step 1** In the **File Setup** tab, enter the input directory where the data are located and select the data file.

File Setup Data	Setup	
Program setup f	ile	
C:\Program File	s\Sea-Bird\SBEDataProcessing-Win32\ASCII_In.psa	
Open	Save Save As Restore	
Input directory		
S:\PRODUCTI	ON\Systems\Winch Systems\UCTD\Data\080809-Cape	
Input files, 1 sel	ected	
254_1451_013	lasc 👤	Select
Output directory		
S:\PRODUCTI	ON\Systems\Winch Systems\UCTD\Data\080809-Cape	Select
Name append		
Uutput file	254_1451_013.cnv	
Not processing		



**Step 2** Choose the **Data Setup** tab and enter the **scan interval variable** and **scan interval value** as shown below. The click on **Select Column Names...**.

🎫 ASCII In		
<u>File Options H</u> elp		
File Setup Data Setup		
Scan interval variable Time, seconds 💌		
Scan interval value 0.0625		
Select Column Names		
Start Process	Exit	Cancel

**Step 3** Add the **Variable Names** as shown below, click **OK**, and then **Start Process**. This will produce an output file with a .cnv extension which is used for further processing.

Select Colu	ımn Names		X
Seq. # 1 2 3 4	Variable Name [unit] Scan Count Conductivity (S/m] Temperature [ITS-90, deg C] Pressure [db]	Add Change Delete Insert Dglete All	Acceleration  Altimeter  Average Sound Velocity  Beam Attenuation, Chelsea/Seatech/W  Beam Attenuation, Chelsea/Seatech/W  Beam Transmission, Chelsea/Seatech/W  Beam Transmission
		Daţa	Conductivity Difference, 2 - 1
			OK Cancel

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## 2. Aligning CT data

The different response times of the conductivity and temperature sensors lead to salinity spiking in the data. In order to minimize this artifact when deriving salinity, the data from the two sensors must be aligned temporally. This is accomplished simply by shifting the temperature data with regard to the conductivity data in time as shown in the step below.

Step 1 Choose the Align CTD... command in the Run menu and select the file produced in the previous section. Choose a different output file name or enter a token in the Name append section unless you want to overwrite this file.

🕮 Align CTD	
<u>File Options</u> <u>H</u> elp	
File Setup Data Setup Header View	
Program setup file	
C:\Program Files\Sea-Bird\SBEDataProcessing-Win32\AlignCTD.psa	
Open Save Save As Restore	
Input directory	
S:\PRODUCTION\Systems\Winch Systems\UCTD\Data\080809-Cape	
Input files, 1 selected	
254_1451_013.cnv	Select
Output directory	
S:\PRODUCTION\Systems\Winch Systems\UCTD\Data\080809-Cape	Select
Name append	
Output file 254_1451_013.cnv	
Not processing	
Start Process Exit	Cancel



Step 2	Click on	Enter	Advance	Values	in the	Data	Setup	tab
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🚟 Align CTD		
File Options Help		
File Setup Data Setup Header View		
[Enter Advance Values]		
Start Process	Exit	Cancel

Step 3 Enter the values shown below for conductivity and temperature. Click OK and Start Process. The output file created will the temperature values advanced in time by 0.12 s with regard to the conductivity values.

Enter Advance Values						
	Variable Name [unit] Conductivity [S/m] Temperature [ITS-90, deg C]	Advance [s] 0 0.12	<u>C</u> lear All			
		OK	Cancel			



## 3. Calculating Sound Speed

The calculation of sound speed according to **Wilson's equation** is described below.

Step 1 Choose the Derive... command in the Run menu and select the file CT aligned produced in the previous section. Choose a different output file name or enter a token in the Name append in the File Setup tab unless you want to overwrite this file.

E Derive
Eile Options Help
File Setup   Data Setup   Miscellaneous   Header View
Program setup file
C:\Program Files\Sea-Bird\SBEDataProcessing-Win32\Derive.psa
OpenSaveSave AsRestore
Instrument configuration file
S:\PRODUCTION\Systems\Winch Systems\UCTD\Data\080809-Cape Flattery\UCT
Select Modify Match instrument configuration to input file
Input directory
S:\PRODUCTION\Systems\Winch Systems\UCTD\Data\080809-Cape
Input files, 1 selected
254_1451_013lagC012.cnv Select
Output directory
S:\PRODUCTION\Systems\Winch Systems\UCTD\Data\080809-Cape Select
Name append
Uutput hie 254_1451_013lagC012SV[cnv
Not processing
Start Process Exit Cancel



🎟 Derive	
Eile Options Help	
File Setup Data Setup Miscellaneous Header View	
[Select Derived Variables]	
Start Process Exit	Cancel

**Step 3** Add the **Variable Names** as shown below, click **OK**, and then **Start Process**. This will produce an ASCII output file with depth listed in first and sound velocity listed in the second column.

Select Deri	ved Variables				X
Seq. # 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	Variable Name [unit] Depth [salt water, ft] Sound Velocity [Wilson, m/s]	Add Change Delete Insert Dglete All	Acceleration  Average Sound Velocity  Density  Depth		Shrink All Expand All Shrink Expand
				ОК	Cancel

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