**“Cookbook”: Example for basic processing of**

**hydroacoustic data in Echoview**

1) Update the calibration file based on temperature and salinity profiles

1.1) Calculate the average depth, temperature and salinity from the CTD file (using the script acoustics.R).

1.2) Open a new file in Echoview

1.3) Load the.raw data (in "Fileset")

1.4) In Dataflow, open Sv Raw pings T1 (120 kHz) and Sv Raw pings T2 (38 kHz)

1.5) Calculate the equivalent sound speed and coefficients of absorption at 38 and 120 kHz (Echoview/Help/Sonar calculator)

1.6) Create and modify the coefficients of absorption and sound speed in the calibration file in the “Fileset” tab ("New" button)

1.7) Save and close the calibration file for that day (.ecs file)

1.8) Add the depth of the transceivers (1 m) in Dataflow/Transducer 1

2) Clean and prepare the echograms in Echoview:

2.1) Add the Background Noise Removal variable to Sv raw ping T1 and T2. Make sure to set the vertical overlap to 100%.

2.2) Add the Transient Noise Removal variable to both frequencies. Make sure to set the Noise sample replacement value to Percentile.

2.3) Add the Impulse Noise Removal variable to both frequencies. Make sure to set the Noise sample replacement value to Mean.

2.4) Add the Attenuated Signal Removal variable to both frequencies. Make sure to set the replacement value to Percentile.

2.1) Open the Attenuated signal removal echogram at both frequencies. Change the color scale range (-90 to -40 dB) and the vertical range (Variable properties/Echogram display).

2.2) At 38 kHz, add a best bottom candidate line pick (in New Virtual Line) and adjust the "Best candidate line pick settings". Add a smoothing filter (existing bottom -1 m in New Virtual Line).

2.3) On the 38kHz echogram, add a bottom offset of -1 m to exclude the bottom dead zone. (New editable line)

2.4) Add a top line to remove the near field region (new line, fixed depth of X m)

2.5) Exclude above Top line and below Bottom line (Variable properties/Analysis)

2.6) Clean the data using the drawing tools. Right click then “define region” and “Bad data” function

2.7) Add the integration line (Variable properties/Echogram display/In window)

2.8) Scrutinize both echograms (38 and 120 kHz) for errors and verify the bottom line. Adjust if needed (using “L” when Bottom line is selected).

2.9) In the dataflow, add new variable “Processed data” at each frequency to obtain clean echograms. Open these new echograms.

2.10) Exclude above Top line and below Bottom line (Variable properties/Analysis) and click on Apply bad data regions and Include the volume of no-data samples

2.11) Add 1m vertical by one-minute horizontal echo-integration grids (Variable properties/Grid) at both frequencies.

3) Echo integration and export of the data (once per day)

3.1) Select all variables (check white boxes) in View/EV file properties/Export and output empty cells and single target pings

3.2) Export data by cell (Echogram/Export/Analysis by cells/Integration) at 38 kHz and at 120 kHz.

3.3) Save the .EV file for that day.

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