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•*How can we convert DIDSON images and movies in a format suitable for reports and presentations?*

The DIDSON topside software has commands to let one make a jpg of any frame or AVI files of any movie. This allows one to easily put DIDSON data into presentations and reports.

What do we need to work with the raw DIDSON Data Files (DDF files) on our own computers with our own programs?

If one wants to work with the raw data and process it on other computers, we have MatLab files that can read the image frames and store them in MATLAB as arrays. If one does not have MATLAB, the MATLAB programs are easy to read (for a general programmer) and can be easily translated into other program languages. The image arrays are 96 by 512 byte arrays for HF mode and 48 by 512 for LF mode. Each array is one "frame" of DIDSON data.

•*Does DIDSON have an auto tracking feature?*

We have a auto-counting feature that generates an echogram as well as sizes, counts, and timestamps each detected fish. One can click on a mark on the echogram and bring up a snippet of acoustic video of the fish that made that mark.

•*What data management features are there?*

We have features that record only when an object above a set threshold goes by. This is good if you have fish spaced out so most of the time you have background only. This greatly reduces file size. Or, You can take the raw data and process it with our background subtraction and motion enhancement routines, then zip the data to less than 1% of its original size. Alaska Department of Fish and Game has 100s and many times, 1000s of fish per hour. They record 15 minutes each hour, count the number of fish in the 15 minutes and multiply by 4.

•*How does the Transmission Loss command work?*

The Transmission Loss Command is a software function that applies an attenuation function that is maximum attenuation at the window start range, and zero attenuation at the window end range. It is active for the displayed data only, and does not change the value of the stored data (unless "Save Displayed Data Only" flag is set while doing a "File->Save" or "File->Save As" command during playback). The TL command balances the brightness of an image from max range to min range. The rate of attenuation is varied by changing the spreading loss and the attenuation factor in the Processing Parameters window.

•*What does receiver gain control do?*

Receiver gain varies the wideband amplification of each channel before the bandpass filter stage and detection. The gain range is 0 dB to +40 dB. For short range windows with very close or very bright targets/backgrounds, reduce the receiver gain to avoid saturating the signal conditioning circuitry.

•*What are the Threshold and Intensity controls?*

Threshold and intensity apply only to the displayed image (e.g. no effect on raw data). The color palette is scaled from the threshold value to the intensity value. For example assume the data returns do not range over the entire dynamic range (90 dB) but range from say 16 dB to 72 dB. Set Threshold to 16 dB and the Intensity to 72 dB and the returned data will map over all the

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colors in the display palette. Use the "View->Palette" command to observe the color scaling, where the left side of the window is 0 dB, and the right side is 90 dB.

•*How is motion-detect recording activated?*

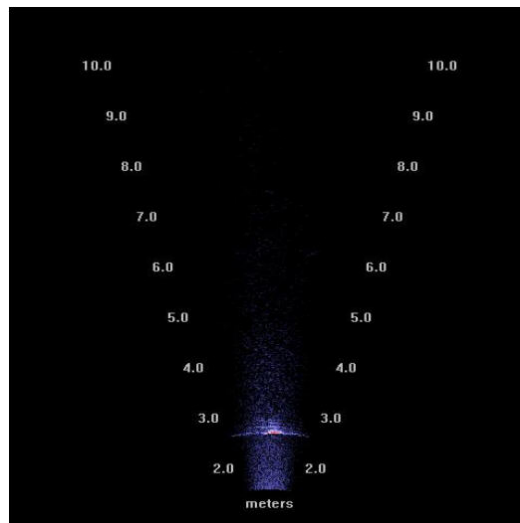
Motion detection recording is activated via the "Periodic: N Samples over Threshold" flag in "Image->Capture->Record Options". If the motion detection processor is enabled, then the "Threshold" parameter is "don't care", as all non-zero samples have the same value. The N Samples parameter is set to screen out targets smaller than those of interest (of course, a large number of small targets will accumulate enough non-zero samples to cross the threshold).

This option works in either real-time or playback modes. If the "Save Displayed Data Only" flag is set, then a file may be quickly converted to a motion detection image file (suitable for subsequent compression) with the "File->Save As" command.

•*Is there is a way to prevent the distortion that occurs when a fish swims by at close range? We have identified two effects as illustrated by the attached image files:*

- a) *The primary target creates an arching (or interference) effect across the entire horizontal view-field at the range where the primary target is located, and may prevent other targets at the same range from being detected;*

This is a result of acoustic crosstalk, and cannot be eliminated or reduced. You may employ the transmission loss correction and/or reduce receiver gain to minimize the visual effect, especially at close range.



- b) *The primary target creates multiple shadows behind it. This may prevent the viewer from counting other targets in the shadow zone or cause the viewer to misinterpret the shadows as separate targets from the primary target.*

This is a result of internal lens reflection, and also cannot be changed. The same mitigation strategy may be used (TL correction, reduce gain).



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2. *Can we save the display control settings? This will enable another person to use the same settings for reading the file.*

Use the command "Edit->Application->Save App Settings" and "Edit->Application->Load App Settings" for this purpose.

3. *How can we go to a specific frame of interest in a file?*

Use "Image->Playback->Goto Frame" to go to a specific frame, or use the slider under the file position progress bar to go to an approximate time in the file.

4. *Do you provide a documentation of file format of DDF files so users can access the raw pixel data to carry out various post-processing data analyses?*

See the document *DIDSON V4.50.01 Data File and Ethernet Structure.pdf*.

- *How do you save a constant background file and then load it during playback so that you can remove background for the motion-detect echogram display?*

With "Background Subtraction" enabled, and the source file played through a quiet period with only the background imaged, pause playback and use the "Processing->Background->Save Background File" command to save the background array to a named file. The same file may be reloaded at any time with the "Processing->Background->Load Background File" command (with the "Processing->Background->Fixed Background" flag set) to remove the given background from any image file taken with the same geometric setup.

- *Default settings for header and sonar control windows are not good; when DIDSON window is changed, these panels need to be resized constantly to make all information accessible.*

This generally means the default font size on your display has changed. Right-click on the desktop, then click "Properties->Settings->Advanced" and select the "Normal (96 dpi)" text setting. All information is then available in the windows. Future releases will attempt to correct for this automatically.

- *What is the difference between samples and clusters?*

A "cluster" is N contiguous samples.

- *Is there the ability to mark a fish with color during playback, with a mouse click on it, and have color stay with fish until it disappears?*

This function is available using the "Processing->Fish->Mark Fish" function with the "Processing->Fish->Size Marked Fish Manually" flag turned off. To force a count on fish that don't meet the auto-counting parameters, set the "Processing->Fish->Force Auto-Size Count" flag before clicking on the fish (this will count a fish even if you click on a totally blank area of the image).

- *What are some starting guidelines for threshold settings?*

For background subtracted images, values of 10-14 dB are a good place to start. For motion detected images, try starting with values from 6-8 dB. Either case will depend on the image environment, so there are no absolutes.



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•How may I save a selected number of frames of a DIDSON DDF file to an AVI format?

This is a piece of cake:

- 1) Set the endpoints to include the frames you want to save (Image>Set Endpoints)
- 2) Set the threshold, Intensity, and Transmission Loss to make the image look as good as possible
- 3) Click on the Measure tool and draw a rectangle around the area you want to make an AVI. (This crops the image)
- 4) Click on File Save As and select AVI as the file type (Also rename as you wish)
- 5) Answer yes to the option to truncate saved files to selected endpoints
- 6) For compression, selection Microsoft Video 1
- 7) Save the file