Data Processing Tools – Help

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Introduction

The Data Processing Tools (DPT) is a collection of data processing functions configured with dialog boxes to allow for batch processing of large data sets. The interface has been split up into multiple tabs, and have been organized based on the different types of tools.

Usage

Specifying Data Files

The first tab in DPT is where you will specify which files you want to process. There are two ways to specify files. The first way by specifying a directory, which will cause all of the files in the specified directory AND the sub-directories to be processed. Alternatively, you can specify individual files. Both methods work concurrently, so you can both specify a directory and individual files at the same time and they will all get processed.

Filter Tools

These tools are meant to be used to filter the data in some way.

Normalization

- Description – The input data file(s) will be normalized by the data from another data file.
- Usage – Specify a data file which has the same scan parameters (# frequency points and frequency range), and a frame from the data file that will be used to normalize the input data file.
- Output – Data file in source folder with name = [input filename] – NORM.[ext]

Scaling

- Description – The input data file(s) will be scaled by the specified factor.
- Usage – Specify a number to factor the data by.
- Output – Data file in source folder with name = [input filename] – SCALED x[factor].[ext]

Time Windowing

- Description – Windows the data from the input data file, leaving only data from the specified time window.
- Usage – Specify a start and stop time to window the data, and choose whether to apply a hanning window to the data.
- Output – Data file in source folder with name = [input filename] – TW [start time]-[stop time]ns.[ext]

Data Subtraction

- Description – Subtracts the averaged scans of the specified data from the input file(s).
- Usage – Specify a data file to have subtracted from the input file(s).
- Output – Data file in source folder with name = [input filename] – SUB.[ext]

Running Average Subtraction

- Description – Runs through the input data file(s) and subtract the average of the previous n scans of the same combination from each scan.
- Usage – Specify the number of scans to be average for each subtraction.
- Output – Data file in source folder with name = [input filename] – RUN AVG SUB OF [number] SCANS.[ext]

Analysis Tools

These tools are to be used to assist with data analysis.

Average Frames

- Description – Average the scans of the data file into a single frame of the averaged scans.

- Usage – Just click that box and *presto*.
- Output – Data file in source folder with name = [input filename] – AVG FRAME.[ext]

Min/Max Traces

- Description – Goes through the data file and finds the minimum and maximum values for each frequency/range point.
- Usage – Click on the box(es) corresponding to what kind of min/max you are looking for. If you want to plot the traces in log scale then check that box. Additionally, to apply a distance correction factor enter in a number other than 0 into the "Distance Correction" box.
- Output – Opens up and also saves a chart file in source folder with name = [input filename] – MIN MAX [TYPE].cha

Signal-to-Noise Ratio

- Description – Finds the signal to noise ratio of a target signal by dividing the RMS of the target's signal by the RMS of the noise signal.
- Usage – Enter the range, in meters, for the target signal and the noise signal.
- Output – Text file in source folder with name = [input filename] – SNR.txt that contains the average signal-to-noise ratio for the target signal for each of the sensor combinations from the data file.

Editing Tools

These tools are intended to be used to edit the data in some way.

Output Clips

- Description – Outputs a data file which contains a subset of frames from the original data file.
- Usage – Specify the range of frames which you want to output.
- Output – Data file in source folder with name = [input filename] – CLIP – FRAMES [1st frame]-[last frame].[ext]

Output Clip of Last Frames

- Description – Similar to the other clip tools, however this tool will output a data file containing the number of frames you specify from the end of the original data file.
- Usage – Specify the number of frames you would like to output from the end of the file.
- Output – Data file in source folder with name = [input filename] – CLIP – FRAMES [1st frame]-[last frame].[ext]

Output Frequency Band

- Description – Allows you to either output a new data file with frequency data only from a specified range, or output a new data file with everything BUT frequency data from a specified range.
- Usage – Specify a frequency range, in MHz, and then choose to either exclude those points, or not.
- Output – Data file in source folder with name = [input filename] – FREQ [start freq]-[end freq] [EXCLUDED].[ext]

Correct GPS UTM Coordinates

- Description – OK, so I admit, this isn't the most general purpose tool in the whole bunch, but it did come in handy when using it with some the NAVEODTECH data that had an offset in the UTM coordinates. With this tool we were able to correct the offset in the coordinates (however we still couldn't actually see anything so I guess the coordinates weren't that important to fix… sigh).
- Usage – Input the Easting and Northing offset, in meter, that you would apply to the data.
- Output – Data file in source folder with name = [input filename] – OFFSET UTM E [offset] N [offset].[ext]

Data Extraction Tools

These tools are intended for use in extracting information from the data files.

Output Position Data

- Description – This tool lets you extract the position data from the input data file(s).
- Usage – Specify which data you would like to extract and the corresponding sensor number. If the data uses multiple polarizations (and therefore there is redundant position data), you can specify that you'd like to extract the data from only a signal port combination so that you don't have all the redundant position data.
- Output – Tab-delimited text file with the desired position data in source folder with name = [input filename] – POS DATA.txt

Output Start and Stop Times

- Description – Outputs times that the data collection was started and stopped for the input data file(s).
- Usage – Check the box.
- Output – Tab-delimited text file with the filename and start and stop times in 24hour format.

Output Header

- Description – Outputs the header of the data file(s).
- Usage – Check the box.

- Output – Text file in source folder with name = [input filename] – HEADER.txt

Formatting Tools

These tools are intended for use in changing the format of the data files.

Output as [Format]

- Description – Outputs the input data file(s) in the specified format.
- Usage – Check the box.
- Output – Data file in source folder with the same name as the input file, but a different file extension to match the new format.