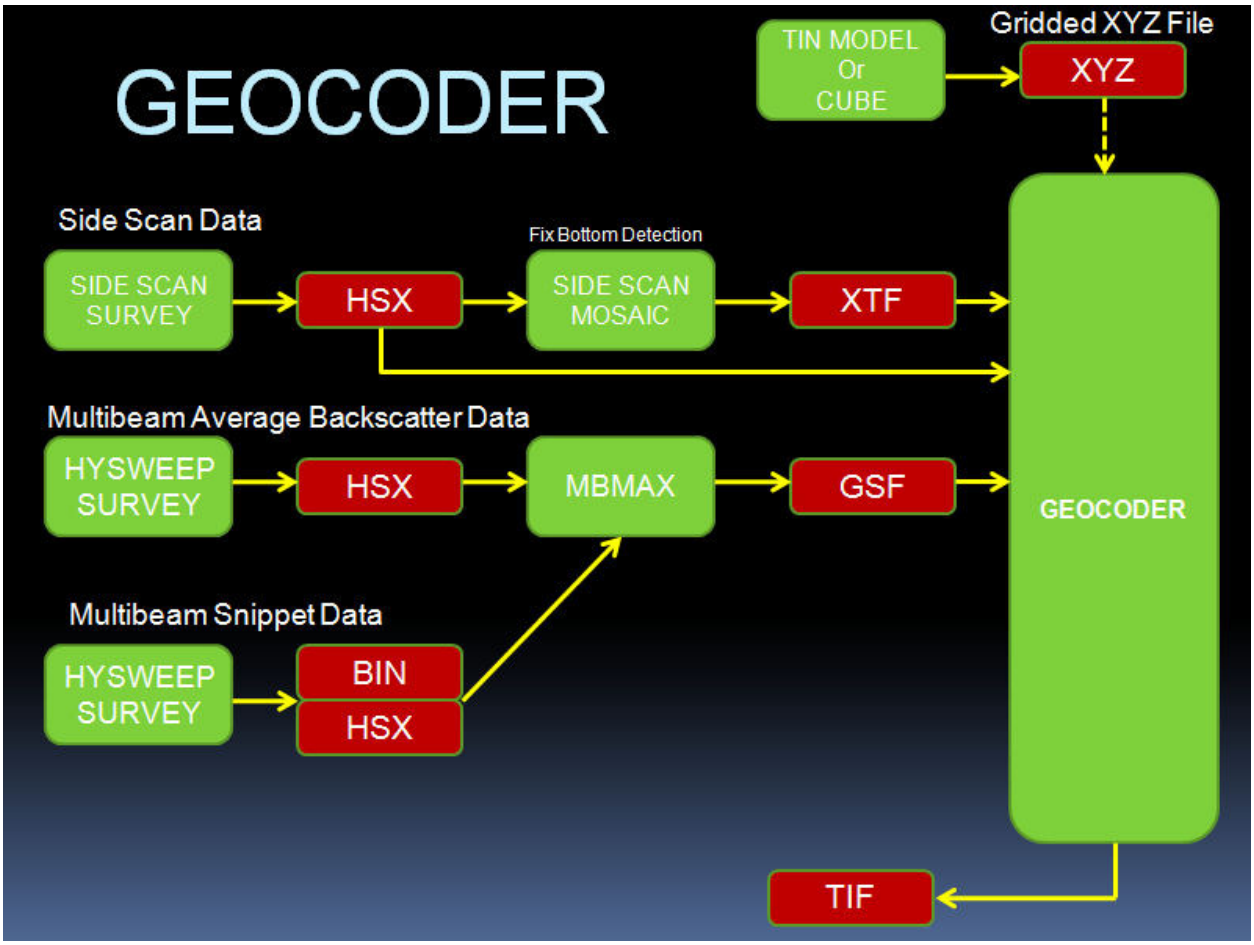
GEOCODER for Dummies

By Pat Sanders



Data Flow for GEOCODER

FILE TYPES:

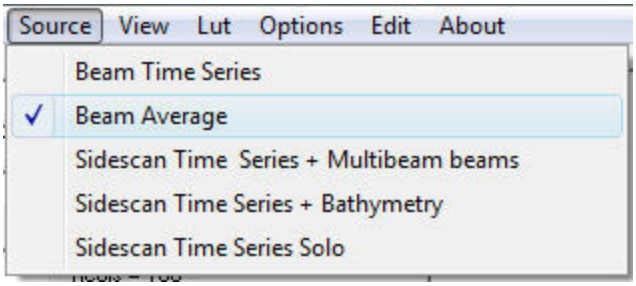
The overall data flow for GEOCODER is shown above.

SIDE SCAN

Side scan data can be collected in SIDE SCAN SURVEY and saved to HSX format. Those HSX files can be read directly into GEOCODER. If you desire, you can read the HSX files into our SIDE SCAN MOSAIC program, fix the bottom track and save the files out to XTF, then read those into GEOCODER. However, my experience shows that GEOCODER does a pretty good job on its bottom detect algorithm. Reading an HSX file into GEOCODER automatically sets the file type to “Sidescan Time Series Solo”, if you have not entered a DTM, or “Sidescan Time Series + Bathymetry” if you have entered a DTM. (See the Source menu, below.)

MULTIBEAM AVERAGE BACKSCATTER

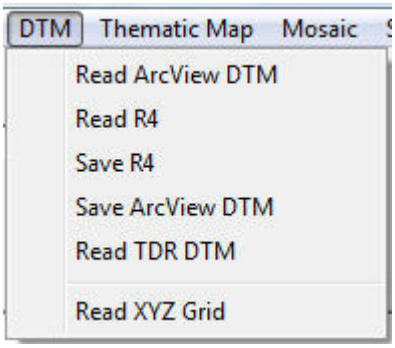
Average backscatter data can be stored in the HSX files by the HYSWEEP® SURVEY program. Those files must be read into MBMAX and then saved out to GSF format (new in the output options) in order to be read into GEOCODER. The Source menu should be set to "Beam Average" before loading the GSF files.



MULTIBEAM SNIPPETS

The HYSWEEP® SURVEY program stores the snippet data in a Binary file. You should load the HSX files into MBMAX and then export a GSF file. MBMAX will automatically read the BIN file and insert the appropriate records in each GSF file. Set the 'Source' to Beam Time Series before loading your GSF files.

DTMs:



Models can be improved by applying AVG (Angle Varied Gain). In order to make use of this function, load an XYZ data file with fixed spacing between sounding points. To create these files:

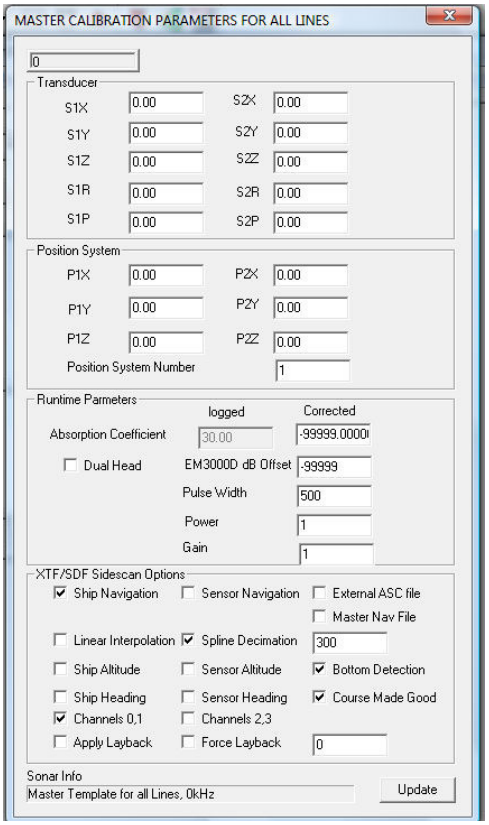
- Save an XYZ file from CUBE
- Save a gridded XYZ file from TIN MODEL, or
- Save values at the center of each cell in MAPPER.

My experience shows that the DTM should be loaded before the side scan or backscatter data. Use the 'Read XYZ Grid' function in the DTM menu.

Setting Calibration Parameters:

Before reading your data files into GEOCODER, select Edit > Calibration Parameters. Don't worry about the offset section, as we take care of all of this internally. The most important part is the XTF/SDF Side Scan Options.

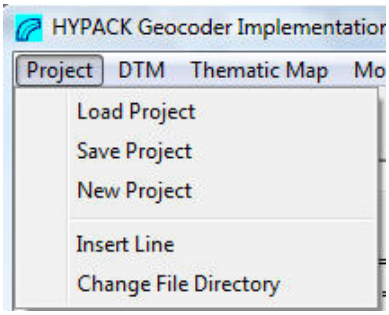
- **Show if the sensor is located on the main vessel or the towfish**. Check either Ship Navigation or Sensor Navigation.
- **Smooth the point-to-point navigation.** We recommend that you use the Spline Decimation with a setting of 300.



- The **altitude** of the towfish above the bottom can be computed from the Ship Altitude, Sensor Altitude or Bottom Detection. We have been using the Bottom Detection for most of our testing.
- The **orientation of the scan** can be either Ship Heading (multibeam systems), Sensor Heading (towfish with heading indicator) or Course Made Good (towfish – computed from positions.)
- **Channels** 0,1 are typically the High Frequency data and Channels 2,3 are typically the low frequency data. You have to make a choice when reading the data into GEOCODER.

For some XTF files, you can tell the program whether to apply the layback contained in the file. You can also fix the layback at a constant distance behind the vessel. If you use the latter feature, you also need to compute 'Apply Layback'. I don't think we currently make use of the layback features in our XTF output.

Inserting Files:



1. Select Project > Insert Line.
2. Specify the data type (HSX or GSF or XTF) and enter one or more files.

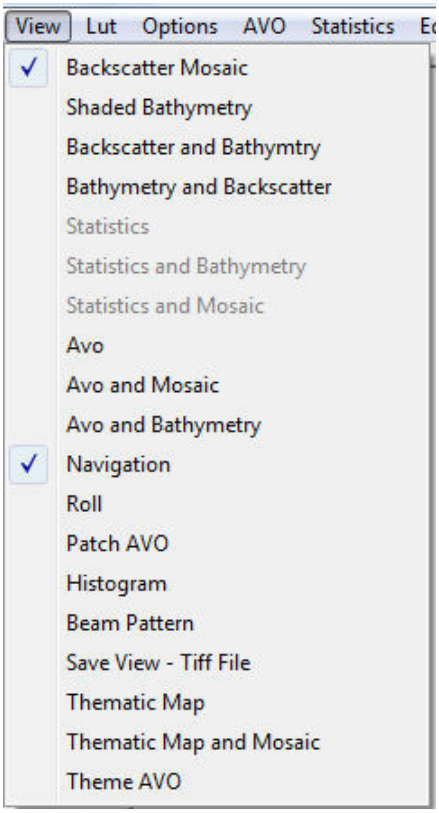
GEOCODER will read each file and display the navigation track and the swath coverage in order to determine the limits of your mosaic.

To limit the area created by the mosaic, select Options>Fixed Bounds and specify the X-Y limits (top left of screen) before reading in any data files.

GEOCODER does not store any information in memory. It reads through data sequentially and extracts whatever data it needs.

View Histogram: Before generating a mosaic, it is useful to examine the histogram and setting the bounds. Select View > Historgram and enter the minimum and maximum dB values to color-code the mosaic.

Beam Pattern: We do not yet have the capability to extract the beam pattern. However, we are working on it and it should be available soon.

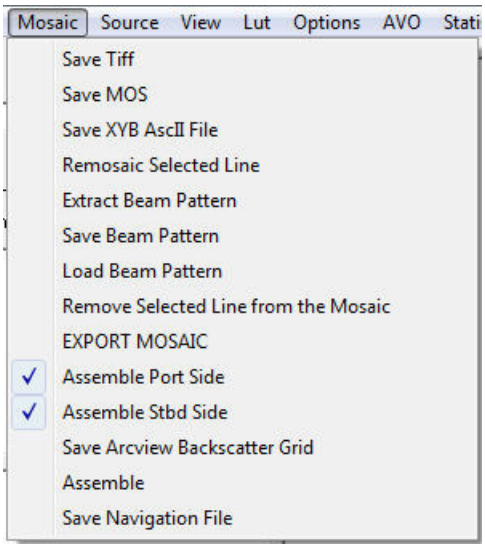


Create Mosaic:

Select Mosaic > Assemble. You'll see the results on the screen as it runs through each file. GSF files are processed much faster than HSX or XTF data.

Working on the Mosaic:

Once the mosaic has been assembled, lighten or darken the area and you can also adjust how the overlap between adjacent lines is determined. You can then either adjust the entire line or a section of the line.



1. Select an individual line you want to work with by clicking on the navigation track line.
2. Select Mosaic > Remosaic Selected Line.
3. If you want to work with only a portion of the selected line, enter the ping numbers.
4. To lighten or darken the area, apply a dB offset
5. To adjust how the overlap between adjacent lines in the selected area is determined. You can select the appropriate method in the bottom of the Remosaic dialog box. Among the options:
   a. Blend (‘blends the overlap)
   b. Fill Gaps (only uses the select line to fill gaps in the adjacent side scan coverage. Adjacent lines rule!
   c. Forced Overlay (forces the selected file to the top of the mosaic and it become opaque.
   d. Delete (remove the selected file from the mosaic.

Saving your Mosaic:

Select Mosaic > Save Tiff. Geocoder saves your mosaic to a TIF & TFW file pair.

Caveat: During a meeting with Luciano Fonseca, he recommended we remove about 2/3 of the available menu items. Many of them are from research he or his students were conducting and the results are negligible or can sometimes cause the program to crash.

ERROR: stackunderflow
OFFENDING COMMAND: begin

STACK: