

# *Importing Single-beam Files into a SonarWiz Project*

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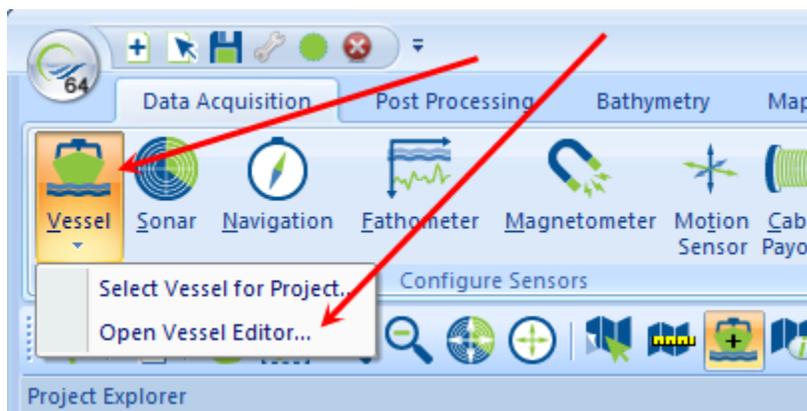
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## 1 Importing Single-beam Files into a SonarWiz 7 Project

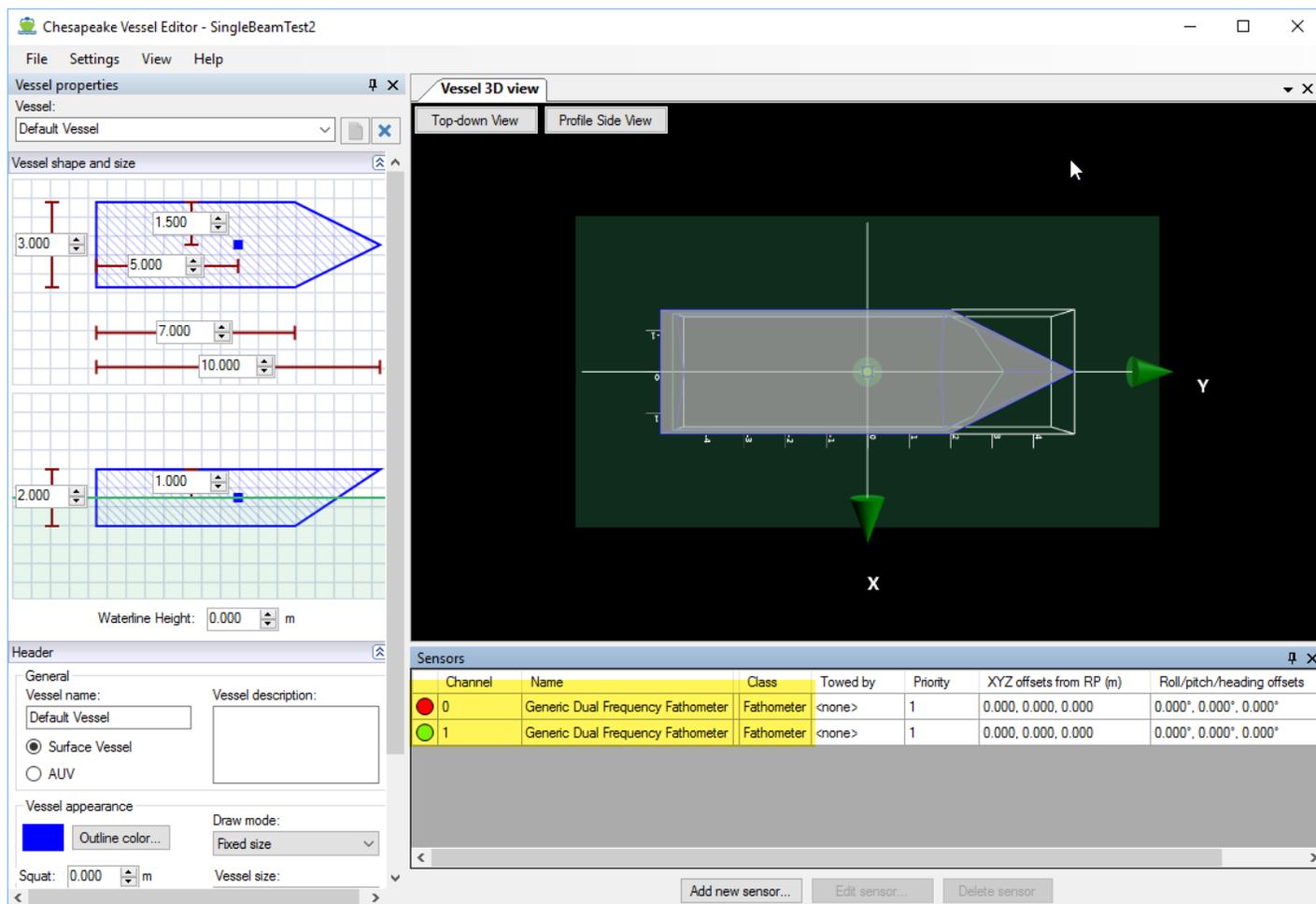
This technical note describes the recommended technique for importing the various types of single-beam files containing fathometer-type depth data into a SonarWiz 7 project. The depth data is exact along a nadir-track line, then you grid the data to interpolate between lines, to get a bathymetric surface view of your survey area.

### 1.1 Create Vessel - And Include a FATHOMETER sensor

After the CREATE PROJECT common to any project type, for a single-beam project, the next step is to select the Vessel , then Open Vessel Editor (SonarWiz 6 GUI example):



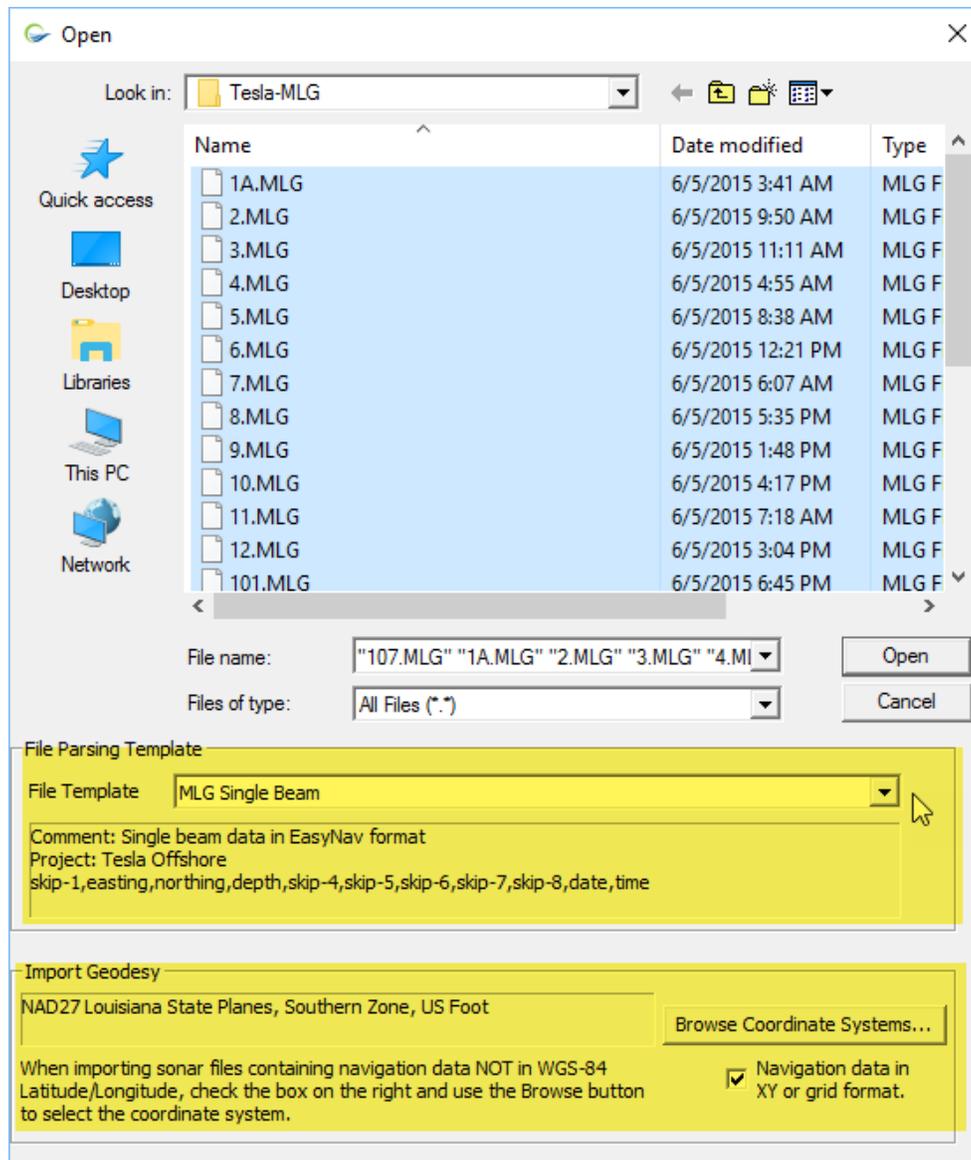
then create a new vessel and include a fathometer category sensor.



Just select any generic fathometer type, if you do not see your listed. The important point in terms of positioning, is to adjust the X/Y/Z with respect to your GPS position, if there is any offset needed in position computations. If the fathometer location = GPS position, then leave all offsets = 0.00.

### 1.2 Post-processing -> Import Single-beam

You will need a bathymetry post-processing license in SonarWiz 7 to see this choice available, but then select to import and your OPEN dialog will look like this:



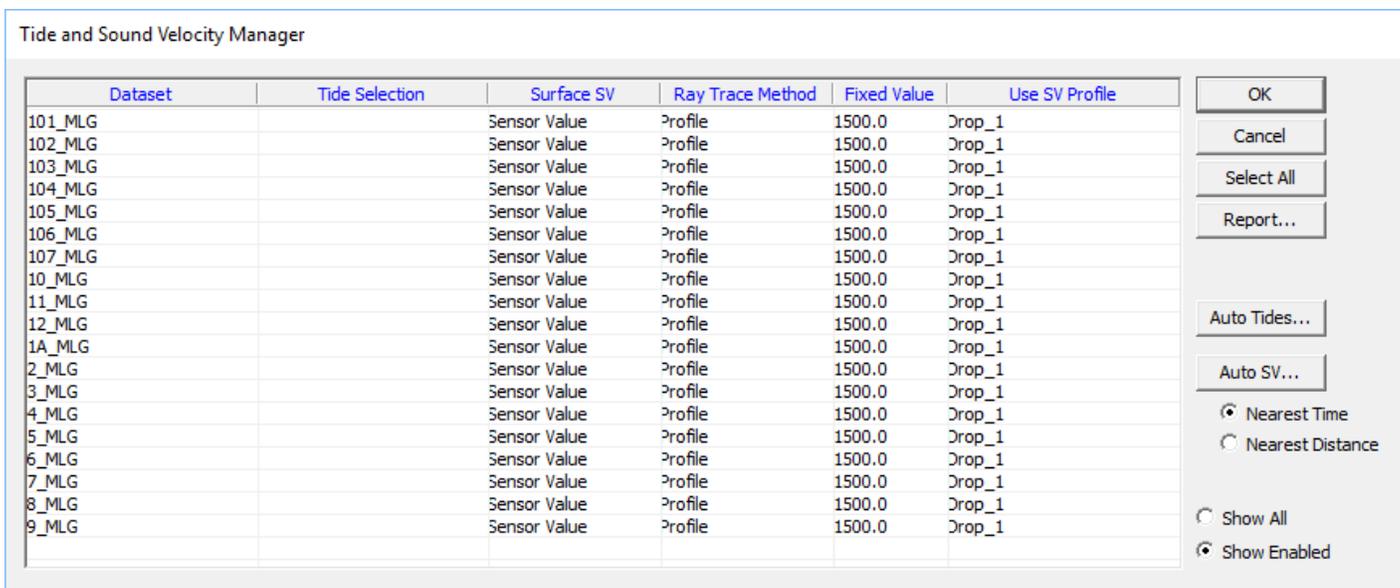
You use the FILE TEMPLATE line to select your import file format, and the IMPORT GEODESY selection should match the recording coordinate system used during the survey. The import transform will save the data internally from that coordinate system, into WGS84 latitude/longitude positions.

Currently, the templates available include Hypack HSX, NMEA and MLG formats. New templates are easy to make upon request however and usually require not code change.

### 1.3 Adjusting for Sound Velocity and Tide Effects

After importing the single-beam data, import or add tide and SV files as available.

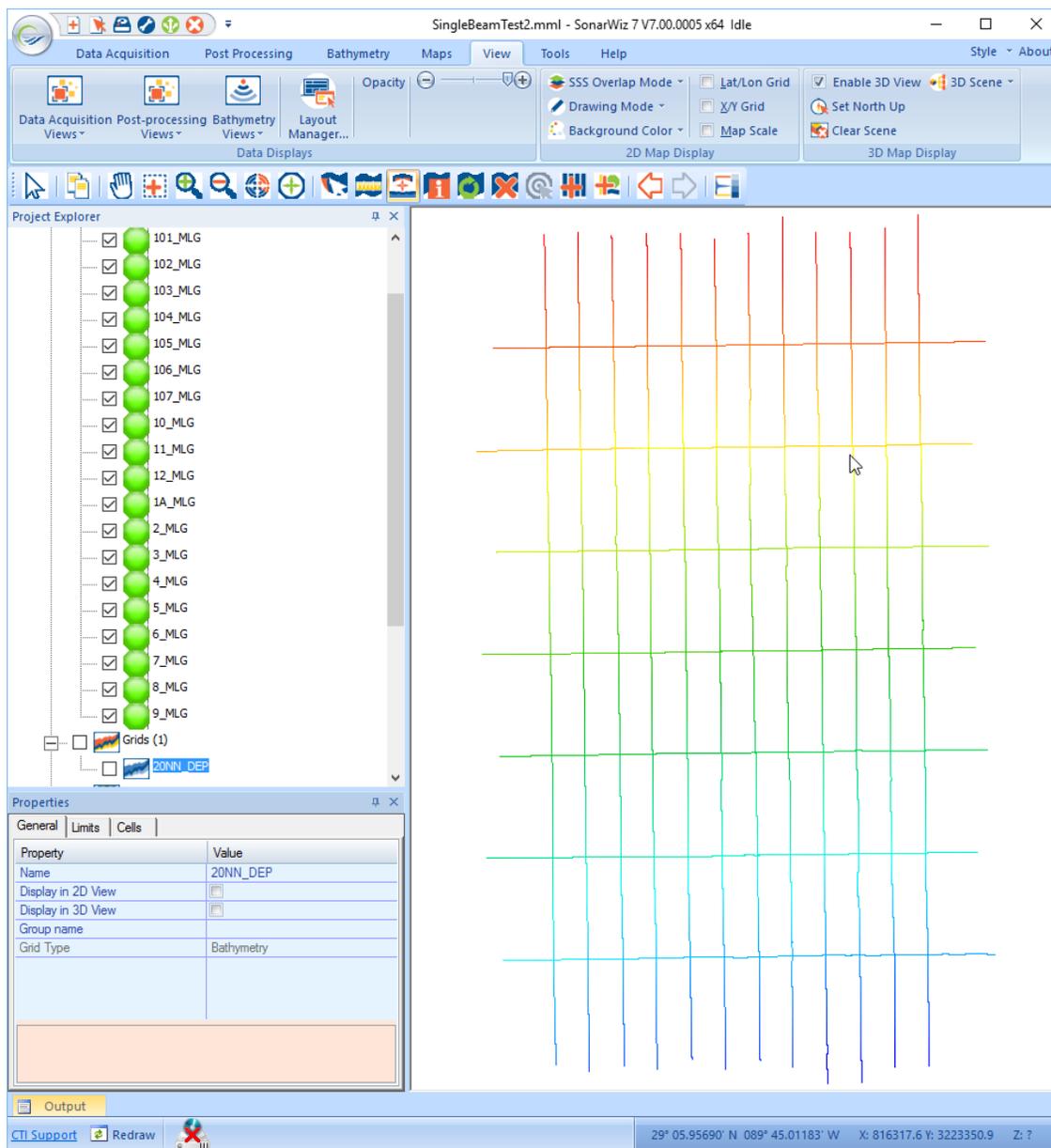
Select how the tide and SV files will be applied using the Tide and Sound Velocity Manager...



Like any imported bathymetry-type file, using bathymetry post-processing license, you are allowed to associate any SV file in the project, or any tide file in the project, with any of the imported single-beam files. You may try the easy approach too, and simply apply a global sound velocity to all computations. No tide files is easy too ... it means no tide adjustment is done.

#### 1.4 Merge Step - Just Like bathymetry workflow

Once you are set up after import and have selected SV and tide effects to apply, the bathymetry computations are done by right-clicking one or more files in the left-side Project Explorer, and selecting MERGE from the drop-menu. Then you can choose which files to merge. Your goal will be to see the ORANGE status files change to GREEN.

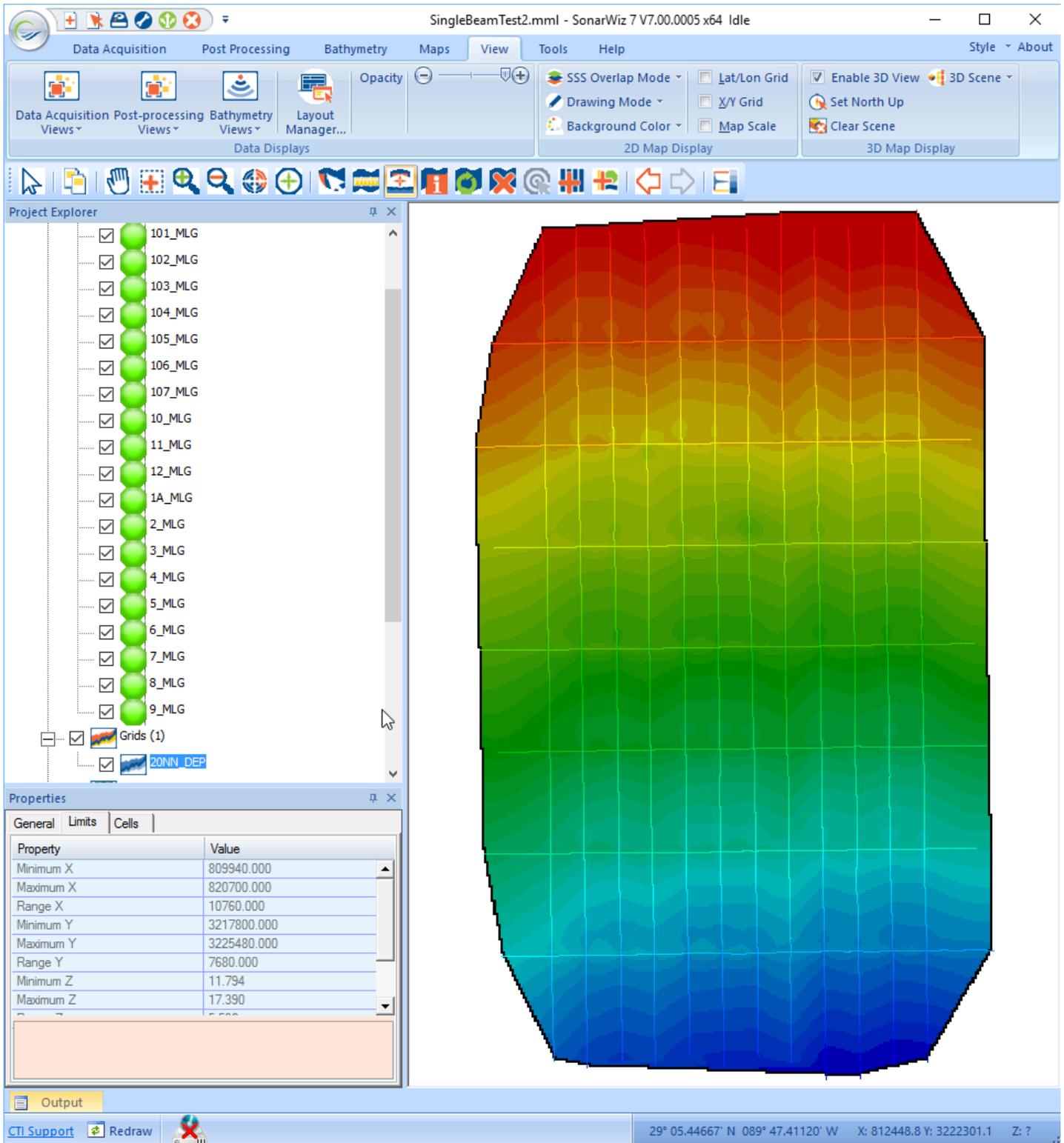


Above is an example survey results view in main map view, showing the single-beam data (which has little across-track extent). To see color-coded depth like that, be sure to open a COLOR WINDOW, and select Data Type = BATHYMETRY.

### 1.5 Gridding - Interpolate between Track Lines and Create a "Surface" View

The final step to really see the value of your single-beam survey, is to create a bathymetric surface view, by gridding your data. This means interpolating between the exacting track-lines, and estimating the surface depth at each point in a tessellated grid of points regularly spaced across the entire surface between the track-lines.

Here is the recommended gridding technique at this time for single-beam data. Create a grid surface by right-clicking on the grids branch of the Project Explorer and selecting Create a New Grid. The Natural Neighbor algorithm works well for single beam data.

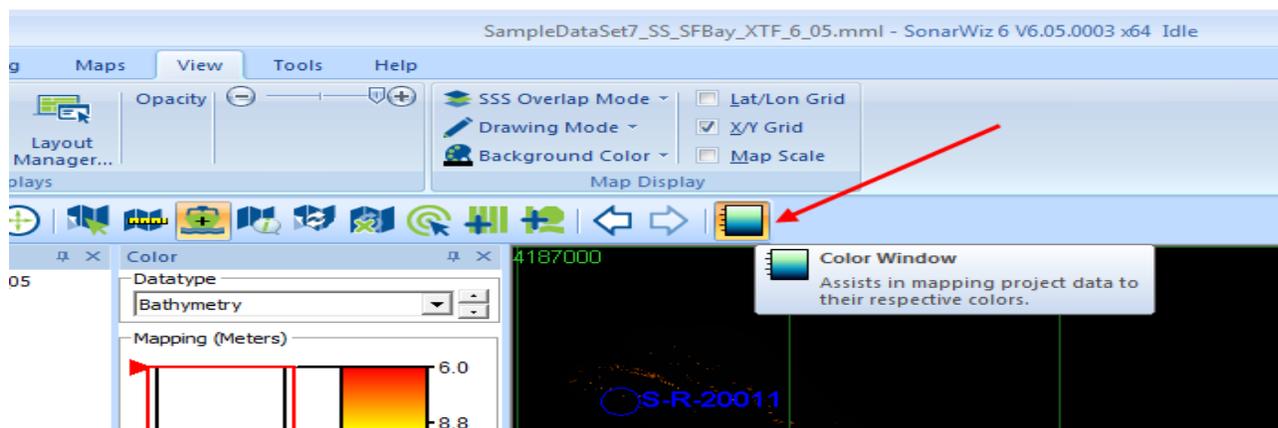


Gridding bathymetry or single-beam data has its own special PDF supplement reference. Please find it here:

[www.chestech-support.com/download/ctisupport/Sonarwiz\\_6/UserDocs/SonarWiz\\_GriddingOptions.pdf](http://www.chestech-support.com/download/ctisupport/Sonarwiz_6/UserDocs/SonarWiz_GriddingOptions.pdf)

## 2 SonarWiz 7 - COLOR WINDOW and HISTOGRAM use

This section explains how to use COLOR WINDOW to color-code the depths viewing in your single-beam ( bathymetry) data display, using the new COLOR WINDOW tool available in the map menu bar.

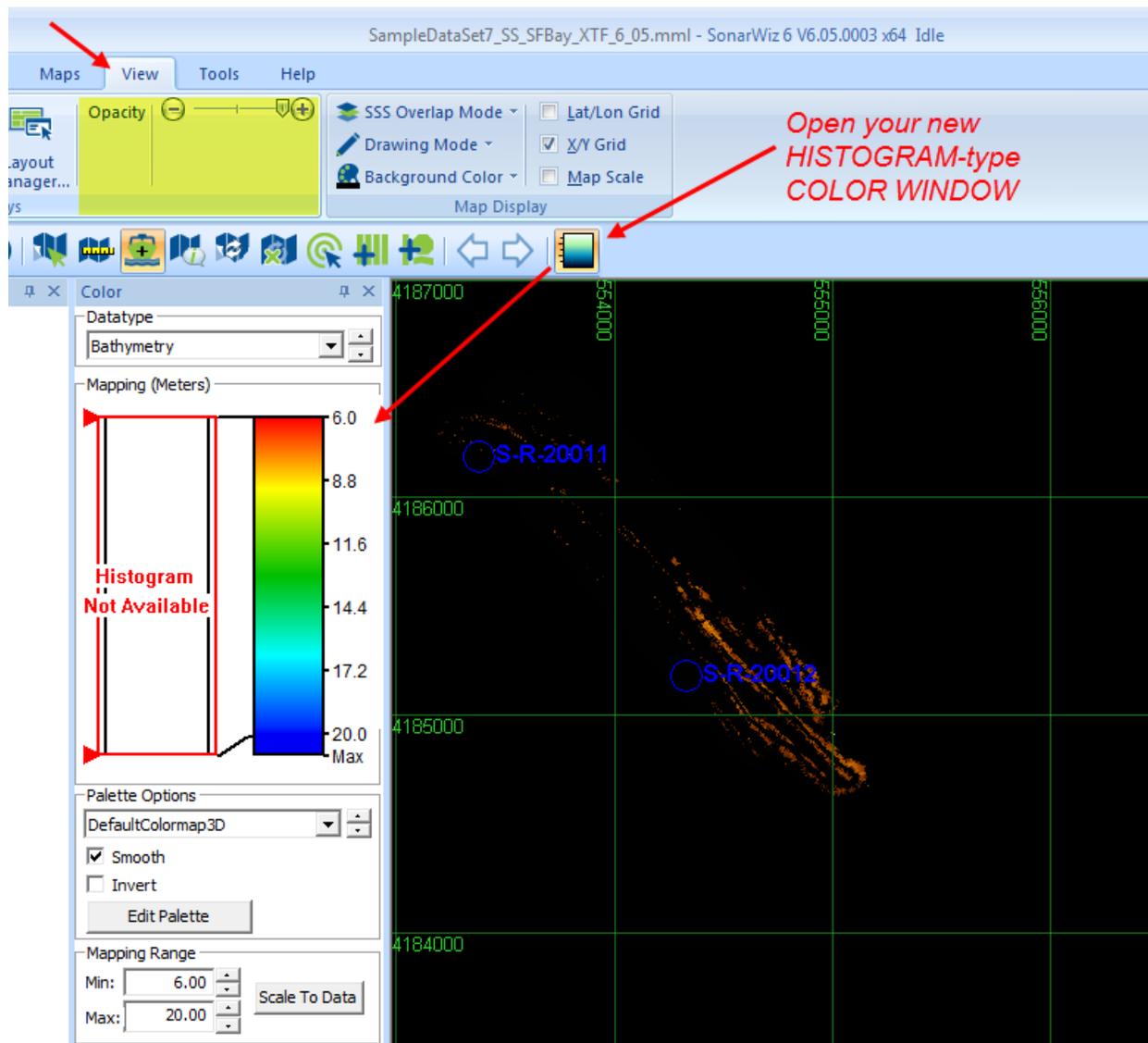


### 2.1 Opening your COLOR WINDOW for use

Note that the COLOR WINDOW button can be pressed in the MAP TOOL BAR, if yours is not showing, to enable the tool, and you can DOCK it left-side of your map-view (instructions are the same for SonarWiz 6.05, or SonarWiz 7):

The screenshot displays the SonarWiz 6 software interface. The main window shows a bathymetry map with a color scale ranging from 6.0 to 20.0 meters. The map includes a grid and several survey lines labeled 'S-R-20011' and 'S-R-20012'. A red arrow points to the 'Color' window, which is open and shows a color palette for bathymetry data. The 'Color' window has a 'Datatype' dropdown set to 'Bathymetry' and a 'Mapping (Meters)' section with a color bar and a 'Histogram Not Available' message. The 'Palette Options' section includes 'DefaultColormap3D', 'Smooth' (checked), and 'Invert' (unchecked). The 'Mapping Range' section shows 'Min: 6.00' and 'Max: 20.00' with a 'Scale To Data' button. A 'Color Window' tooltip is visible, stating 'Assists in mapping project data to their respective colors.'

The COLOR WINDOW has an important HISTOGRAM control:

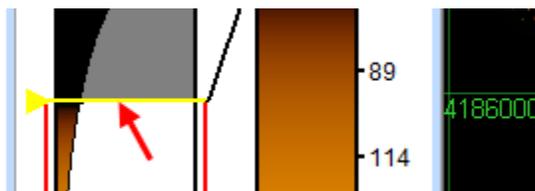


Note that what you adjust here will also be seen in the DigitizerView and BottomTrack view of your data, so it is in effect a replacement for, and equivalent to, thresholding / sniffing a file.

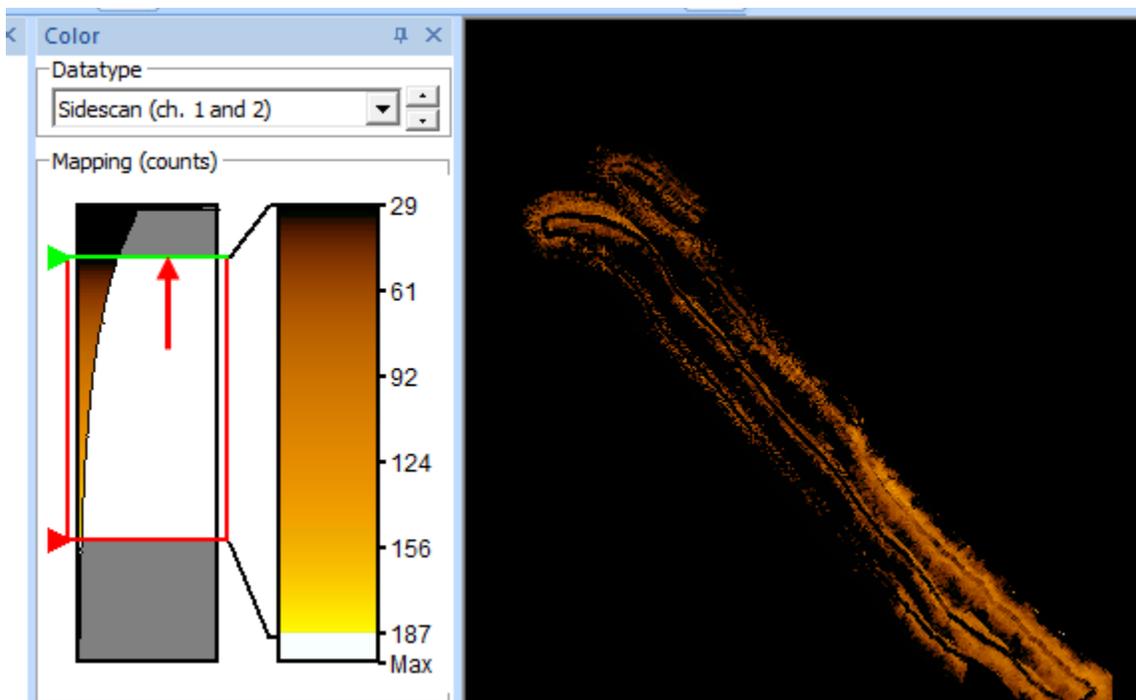
If you see NO HISTOGRAM AVAILABLE, chances are (like this demo GUI), the Datatype selected in the COLOR WINDOW just does not match the data displayed in your map view. So the first thing to do here is change the DATATYPE to BATHYMETRY, since single-beam data is presented as bathymetry depth-coded color.

Now you can change the way color maps to data values, by left-clicking and dragging the upper and lower limit bars in the histogram. Ours currently eliminates a majority (upper portion) of the data values, so we will move the upper limit UP to see a better view of the data:

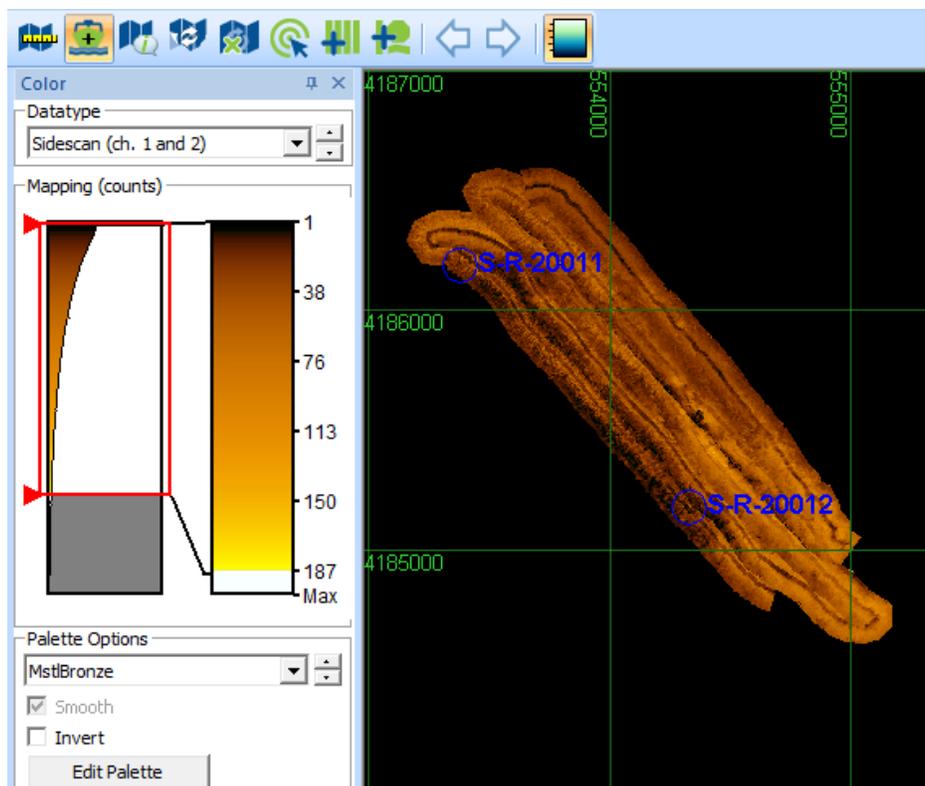
Hover over the LIMIT BAR and it turns YELLOW:



Left-click on it and it turns GREEN - then move it and release the LEFT-CLICK.



Releasing the left-click when the limit bar is where you want it makes it turn RED again and the data will be adjusted.



Another easy option is to click SCALE TO DATA, or simply type in the min/max numbers manually, to adjust histogram upper and lower limit-bar position.

## 2.2 Tutorial Video - HISTOGRAM-type COLOR WINDOW Explained

To see a recent Did You Know? type tutorial video explaining the COLOR WINDOW, and a few other recent sidescan enhancements in SonarWiz, here are a few viewing options:

**DYK SS Mosaic - New Options - 6.05.0001 - tutorial video (4 min 50 secs)**

(1) color window - histogram control design (time 0:00 - 1:14)

<https://www.youtube.com/watch?v=AHT4pftReHI&feature=youtu.be>

or ...

**MP4 download link:**

<https://sonarwiz.box.com/s/8lu07vv6ccg3hvhfdzt4zhnkxm0l479q>

### **3 Document History**

Rev 1, 5/11/2017 - Initial release - for Matt Keith only (demo data was his)