New Side Scan Targeting and Mosaicking Transitions Out of Beta

by Daniel Tobin

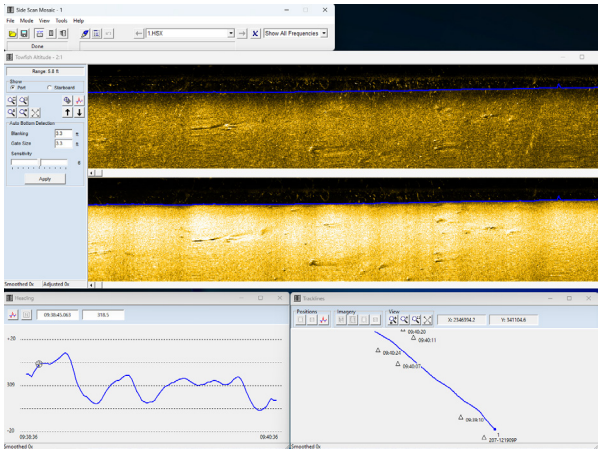
Starting with HYPACK 2025.2, the Side Scan Targeting and Mosaicking (SSTM) Beta program will be replacing the original SSTM program, and the original SSTM will be renamed as SSTM Legacy. What does this mean for side scan sonar users?

If you haven't used the beta until now, you will receive a massively revamped user interface, user experience, rendering engine, and more. Let's break down some of the major changes.

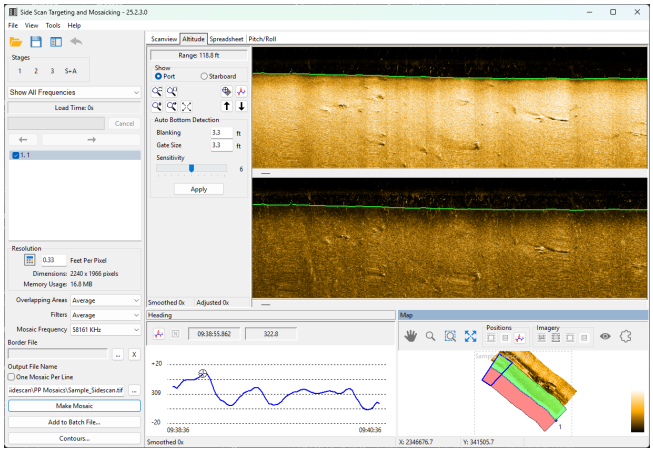
USER INTERFACE

Modern updates and aesthetics have been applied to all icons, buttons, application layout, and more in the user interface.

Here is a screen shot of the old SSTM program:



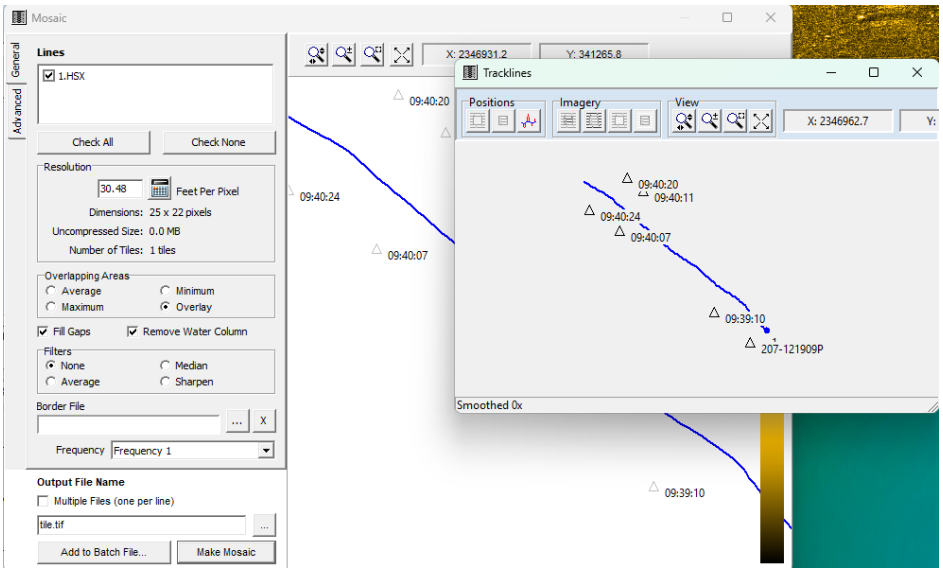
Compare that to the appearance of the new SSTM program:



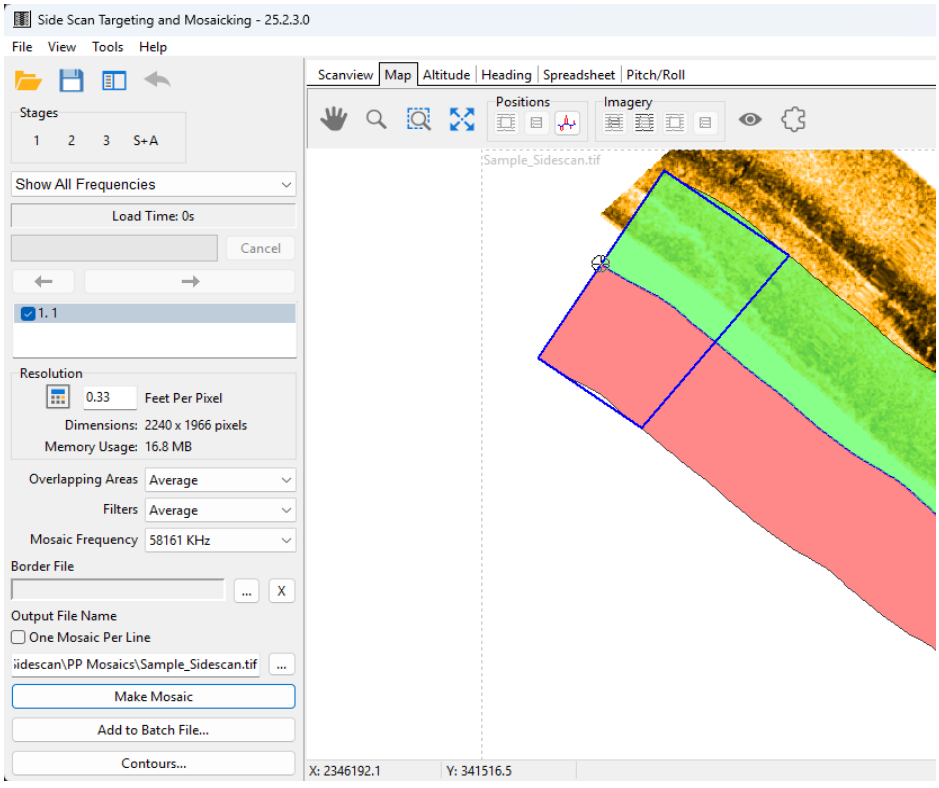
While designing the new UI, I wanted to keep things familiar and not fix what wasn't broken. The main difference comes from merging all of the separate windows into one window. Those separate windows now exist as tabs that can still be dragged out into separate windows or reorganized in the main window.

We now also only have one map view, whereas before we had both a tracklines map and a mosaic map. The mosaic settings were moved to the new sidebar to give more space in that map.

The old, split maps:



The new maps and sidebar mosaic controls:



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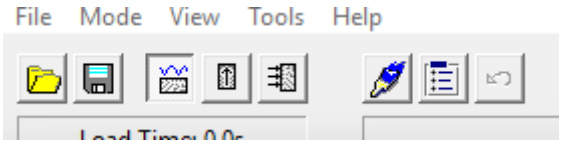
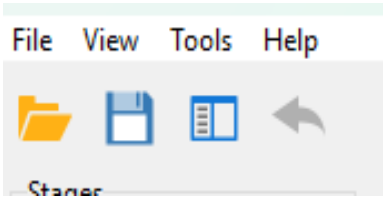
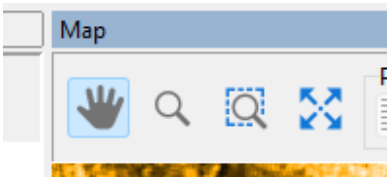
Many of the icons and buttons have also been updated. Here is an example of the old style of buttons:



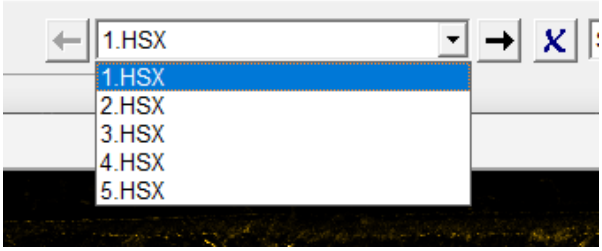
Here are some examples of the updated button style:





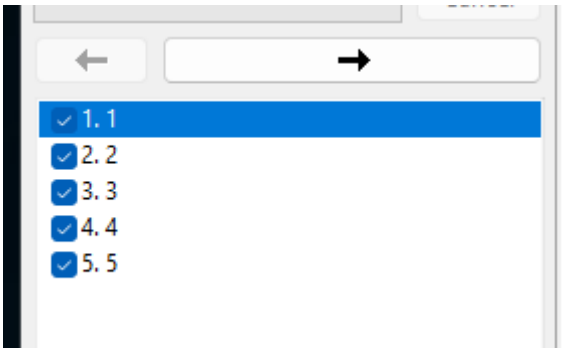
USER EXPERIENCE

The old file selector and file ignore button have both been removed for a new paradigm. Here is the old selector and ignore [X] button:



Selecting a file from the list would switch the display to that file. Then, pressing the [X] button would “ignore“ that file and remove it from the list, as well as any processing or mosaics.

Here is the new file selector:



This lets you see all of your files at all times. Unchecking a checkbox will remove that file from any mosaic renders, while still letting you re-enable the file if you change your mind.

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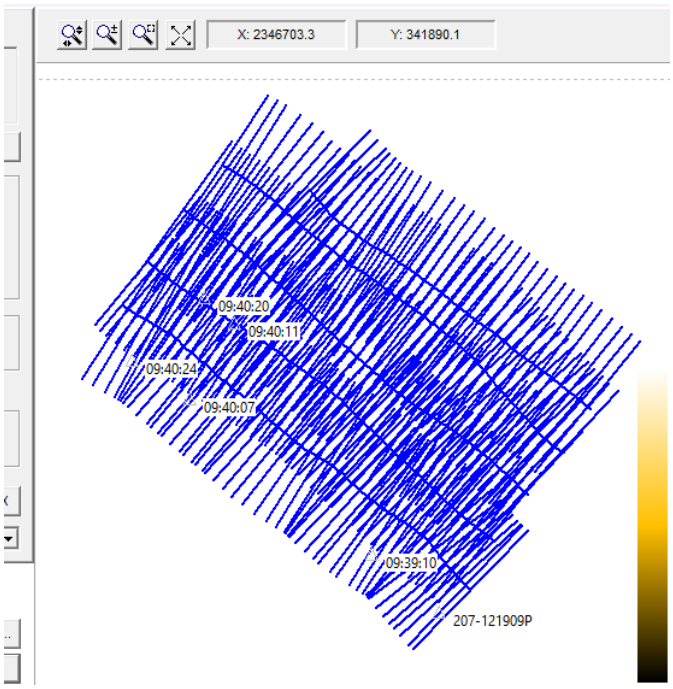
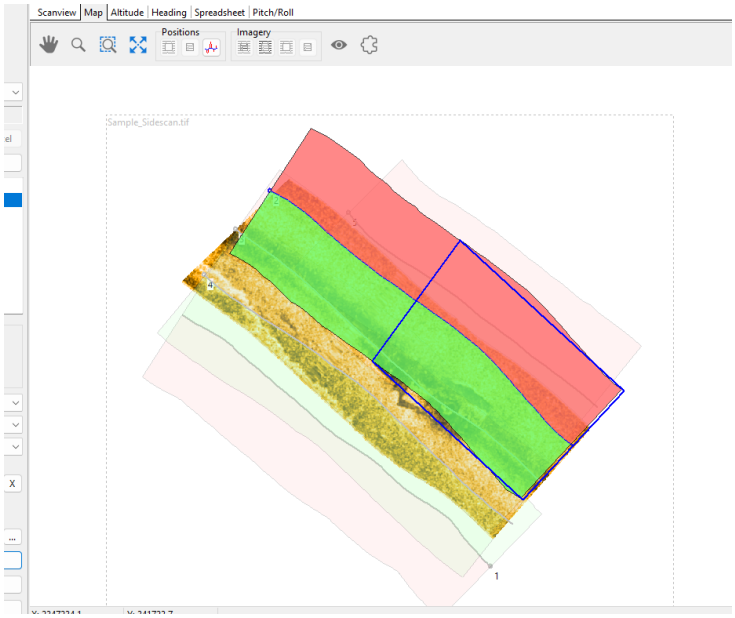
We also updated coverage display behavior. Previously, coverage was indicated by bars perpendicular to the trackline:



The new map displays coverage as a translucent colored polygon. Port side is colored red and starboard side is green, with the current selected line displayed with a darker tint:



Each line's name also appears at the start of its line in the map. The eye icon at the top center lets you "peek" behind any overlays, like coverage or tracklines, to see your data beneath.

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RENDERING ENGINE IMPROVEMENTS

In the legacy version of SSTM, waterfall rendering was entirely single threaded, ran on the main user interface thread, and each window that needed to display a waterfall would render their own copy. Those windows included the scanview, altitude, and target windows.

The updated SSTM waterfall renderer is now multithreaded, which massively speeds up rendering and data display. It also no longer runs on the user interface thread, so the program remains responsive, even while rendering large datasets. The waterfall is also only rendered once (or as needed, such as after changing gains). This single copy is stored in memory and used by each window that needs a waterfall, instead of each window rendering its own copy.

On a slightly selfish note, this change also means making improvements to the waterfall renderer is much easier and quicker. Rather than updating the renderer code for each window, now I only need to update the single waterfall renderer, and all windows will automatically display the changes.

NEW FEATURES

The updated SSTM also includes support for loading HS2x backscatter data. This works very well with our new contouring system, allowing you to create segmentation maps of your data. View this article for more details:

Segmentation in Side Scan Targeting and Mosaicking by Daniel Tobin

In earlier versions of SSTM, data would be loaded into “temporary files“ that were stored on your hard drive. Instead, we now load all data into memory. This speeds up mosaicking as well as file swapping.

The legacy edition of SSTM is still included in HYPACK 2025.2, for users who may be more comfortable with the old edition. That version will no longer receive updates. All new development going forward will be applied to the new SSTM program.