# More isn't Necessarily Better in HYSCAN: A Soap Box Discussion

By Harold Orlinsky

We have all heard that more is better – more soundings, more GPS satellites, more sound velocity casts—more of anything is better for your survey. But I'll show where this rationale doesn't always work.

In HYSCAN (SIDE SCAN TARGETING AND MOSAICKING), we process XTF files to make mosaics. XTF is not a HYPACK® format, but we are able to read the files directly (with no conversion). Your job, though, is to ensure the geodesy is correct, as we'll do the Latitude/ Longitude conversion during the processing to Easting / Northing. If you keep your project in Halifax, and you're processing data from Brazil, you're data will look a bit odd.

Even with the correct geodesy, if you try to process a file with 10000 samples per channel, you're still out of luck. HYSCAN and the HSX CONVERTER (SIDE SCAN DATA REFORMATTER) downsamples the data to a more manageable 6000 samples per channel. I'll admit were reducing the original data, but I don't think you'll detect a difference in the mosaic. Look at it this way:

A side scan line run at 100 meter range scale, with 10000 samples per channel gives you a sample every 1cm in the across track. But to make the mosaic, you need to consider the along track. Ask these three questions: "What is your ping rate?", "What is your tow speed?" and "How good is your position?". I doubt you can even come close to an along track resolution of 5 cm, or even 10cm. In between you're going to fill the data with interpolated data. The mosaic becomes a 10cm gridded data set.

By downsampling this file to 6000 samples, the across track sample rate is one every 1.6 cm. I'm pretty sure you won't notice any difference, except for the processing speed and you'll make your mosaic in half the time. Taking this even further, and downsampling to 1000 samples, you get an across track sample of 10cm and your along track resolution of 10cm. Your 10cm mosaic will look just fine, and you'll have more time to write that survey report. An example of why can be seen below.

A shipwreck mosaicked in HYSCAN at 10cm resolution. The first image is that of the XTF file, not downsampled at all. The second one was done using 1000 samples per channel. (At 75 meter range, we're still getting a sample every 7.5cm). Both are mosaicked at a gridded resolution of 10 cm.

***FIGURE 1.*** *XTF file—No Downsampling (left), 1000 Samples Per Channel (right)*

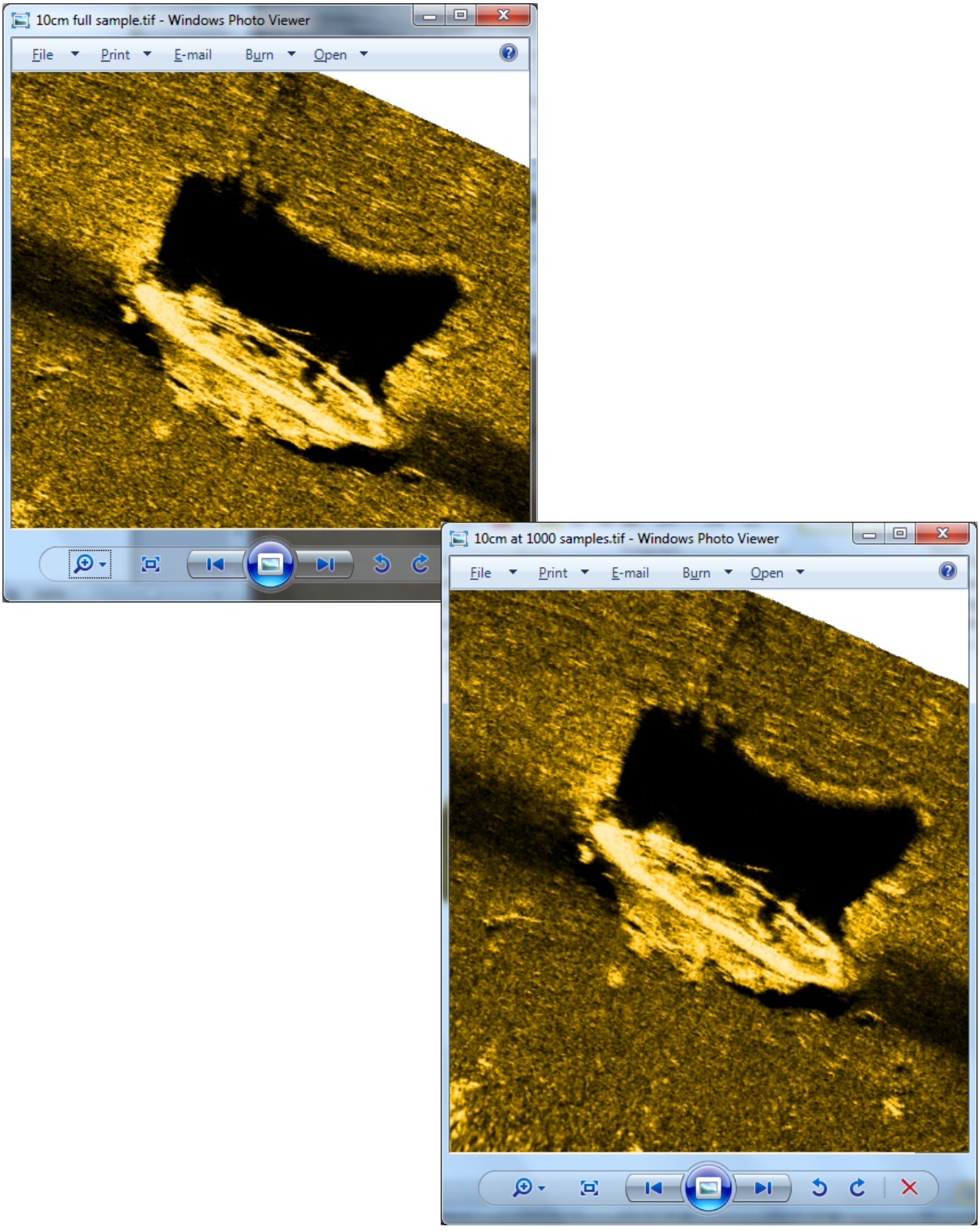

***FIGURE 2.*** *I*

Not much of a difference, except it took less time and the file size was about a third as big.