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Angle Varied Gain in Hyscan

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HYSCAN 2018 (TARGETING AND MOSAICKING) has added a new gain option called Angle Varied Gain (or AVG). This works by normalizing the signal return at a certain angle across all or some pings. This produces an image similar to Auto TVG, in that there is very little manual tweaking necessary to produce a quality image.

Here are a few comparisons. The first in each pair uses standard basic gain, the second uses AVG. Pay attention to the areas near the edge of the swath or near the nadir:

FIGURE 1. Basic Gain #1:

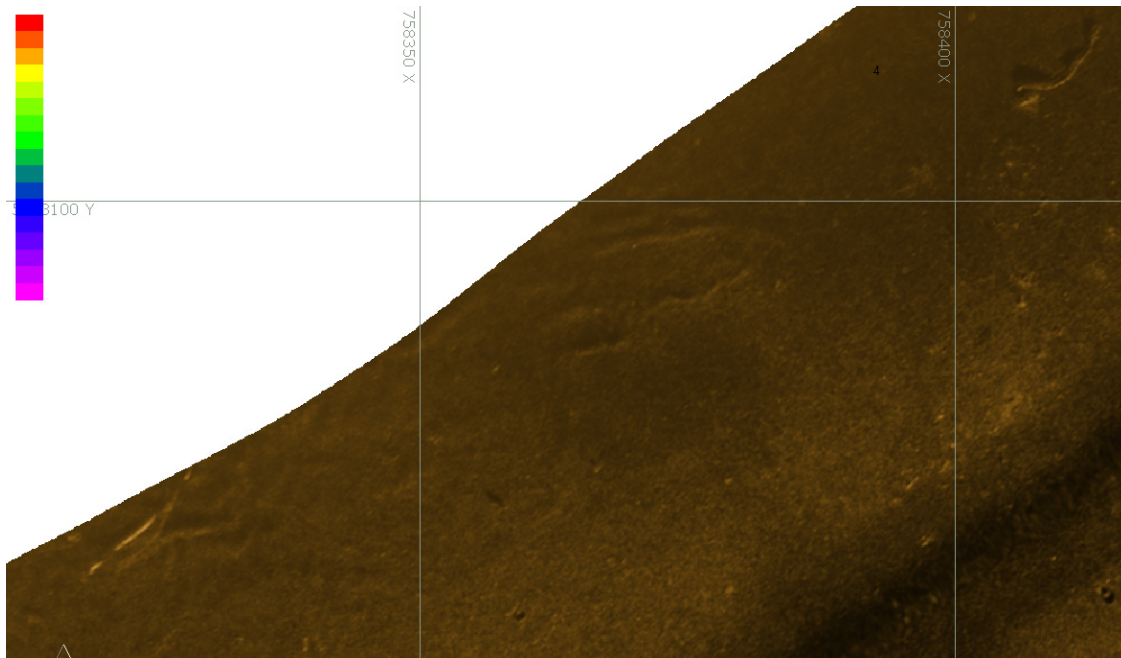


FIGURE 2. AVG #1:

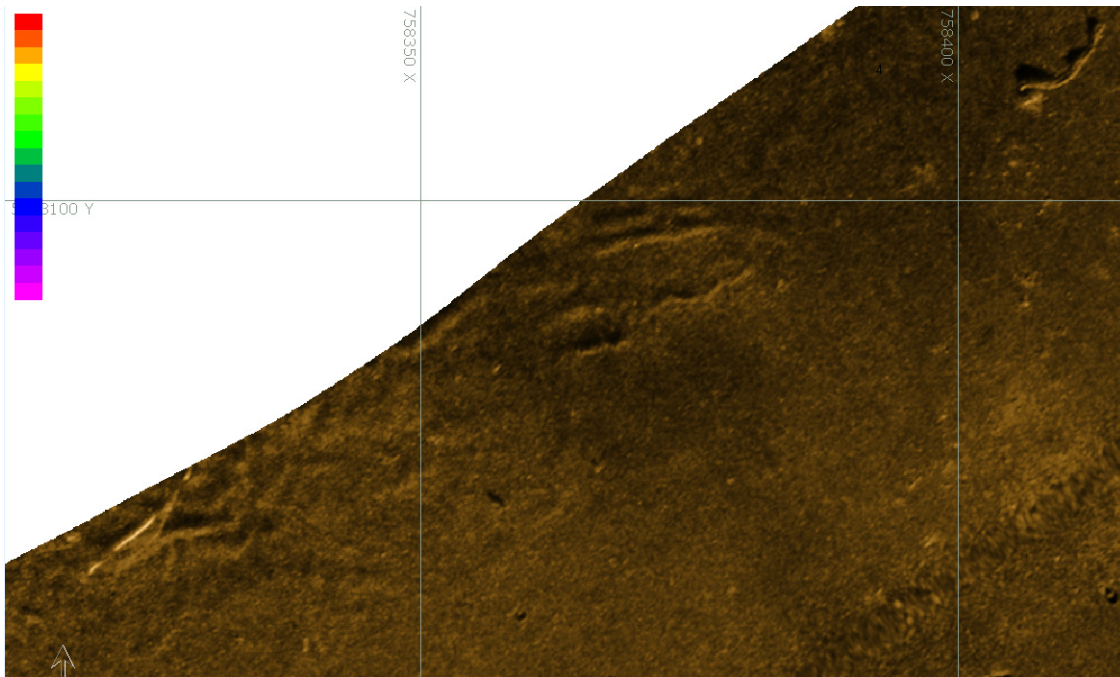


FIGURE 3. Basic gain #2:

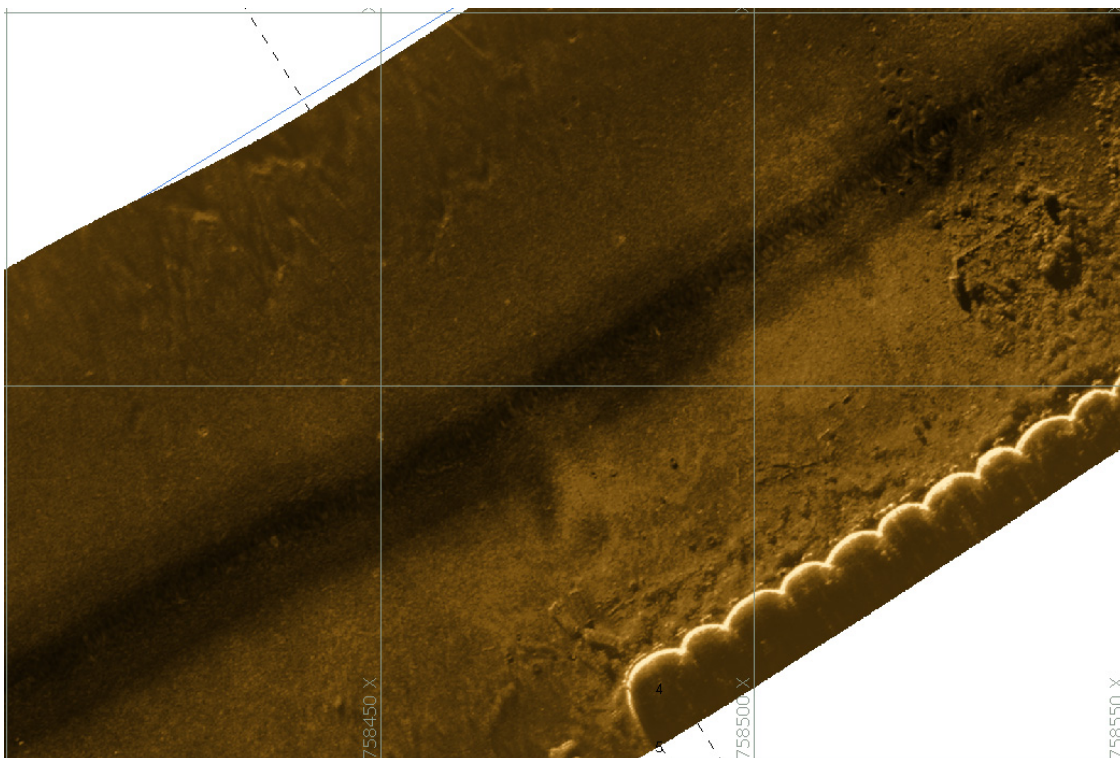
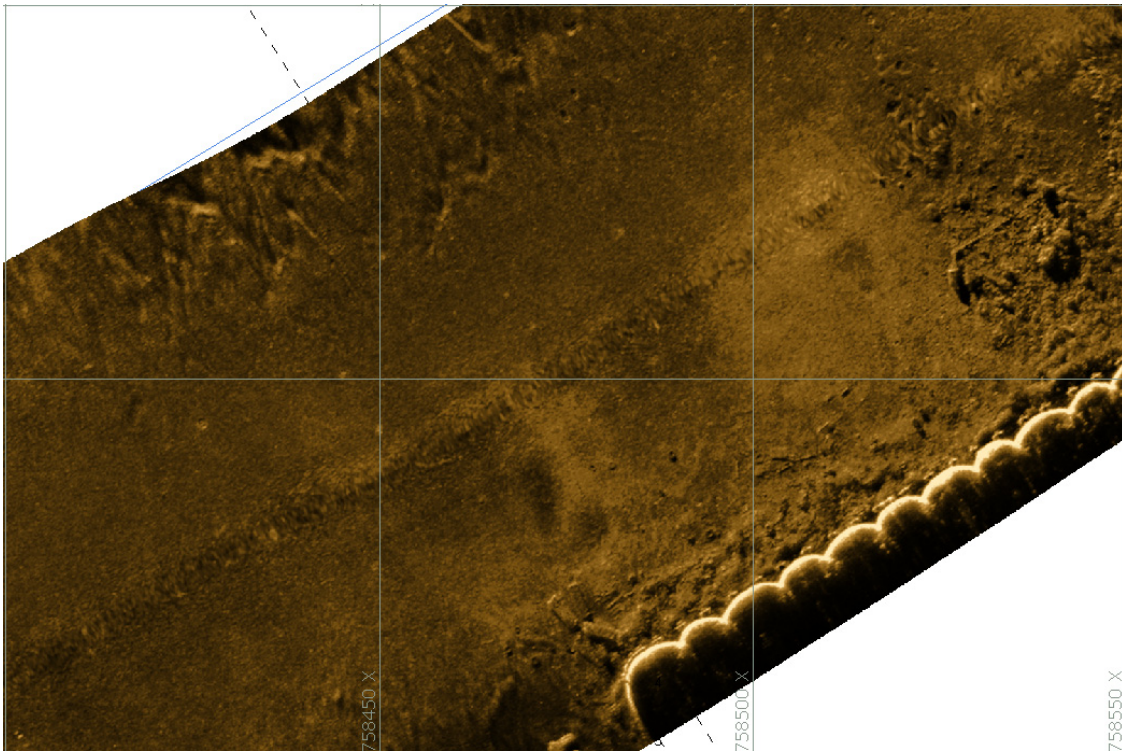


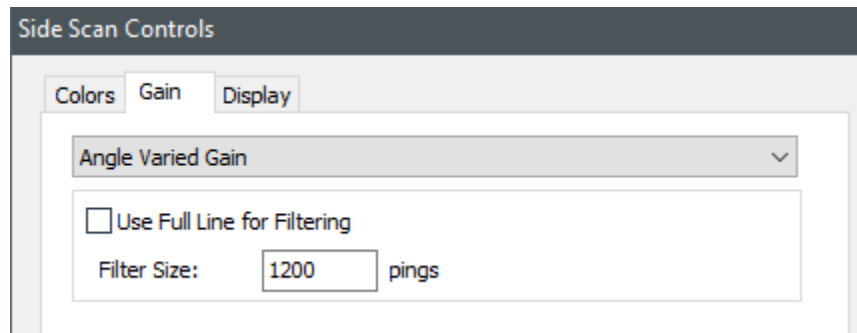
FIGURE 4. AVG #2:



AVG can help bring out data in areas that basic gain cannot, such as near the nadir or at the edges of the image.

To enable AVG, load a dataset then select VIEW-SIDESCAN CONTROLS and, in the Gain tab, select Angle Varied Gain from the drop-down list. HYSCAN will begin to calculate the AVG for your selected line.

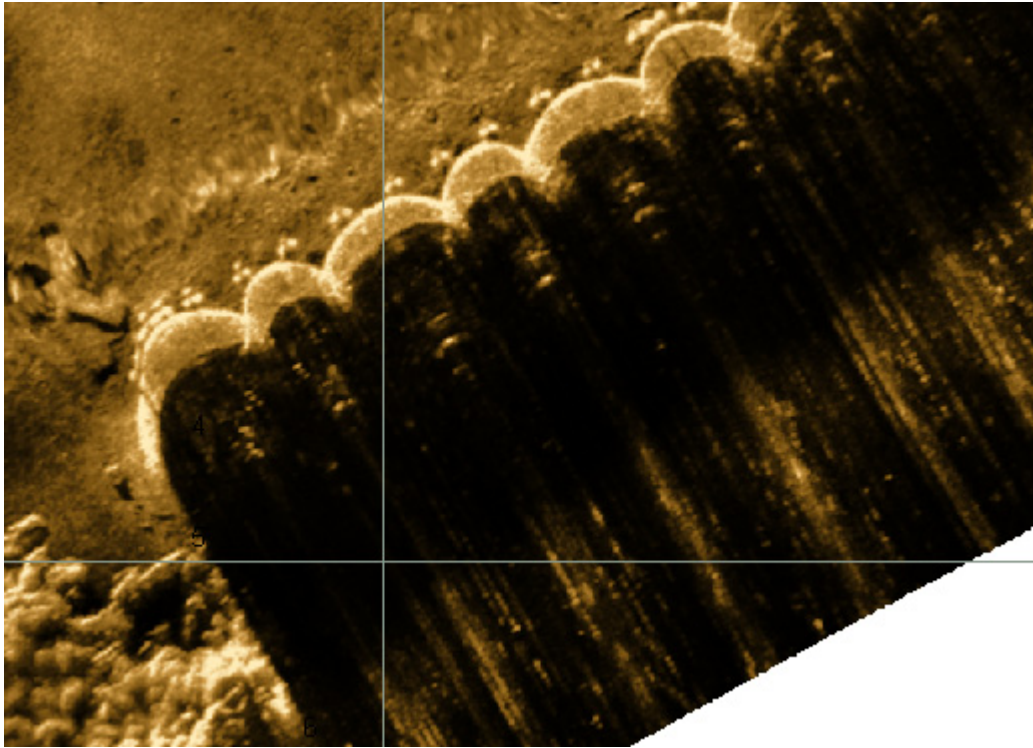
FIGURE 5. Selecting the AVG Option



AVG calculates its correction over a subset of the total number of pings. For example, at a given ping and angle, the algorithm will look ahead and behind some number of pings at that angle. If you set the Filter Size to 600, it will look ahead 300 and behind 300. This can help with datasets with large variations in brightness over the course of a line.

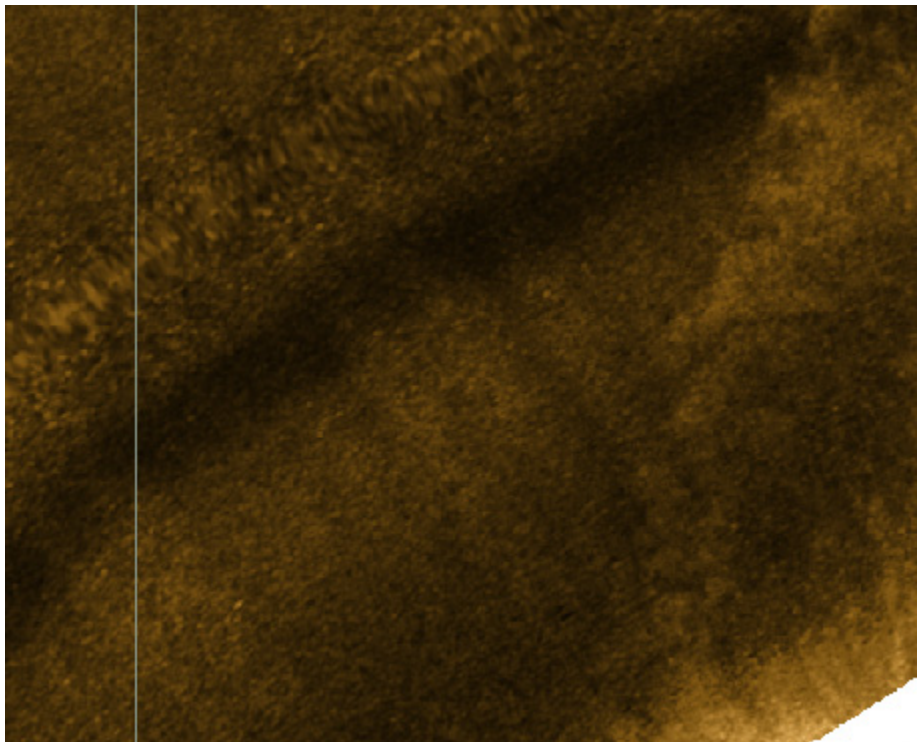
For example, here is a section of a line with a very bright return close to the center (all following pictures were created using AVG):

FIGURE 6. *Full Line Filter—Caissons Produce Large Variations in Brightness,*



The full line filter creates the following dark line artifact later in the line in an area where it's not as bright:

FIGURE 7. *Use Full Line—Farther downline where the returns are less varied.*



If we uncheck “Use Full Line” option and use a Filter Size of 300 pings instead, it removes the dark band seen in Figure 7.

FIGURE 8. *Filter Size of 300 Pings*

