

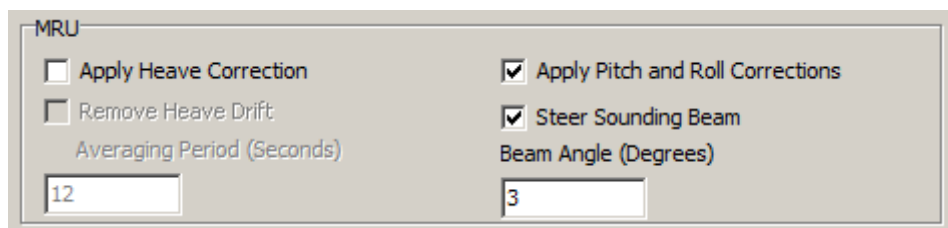


Pitch and Roll Options in SBMAX

by Pat Sanders

In the Advanced Tab of the SBMAX (SINGLE BEAM EDITOR) Read Parameters window, there are some settings on how the program applies the pitch and roll data from an MRU. These settings can affect both the positions and the resultant depths of your sounding data.

FIGURE 1. MRU Options in SBMax



APPLY PITCH AND ROLL CORRECTIONS

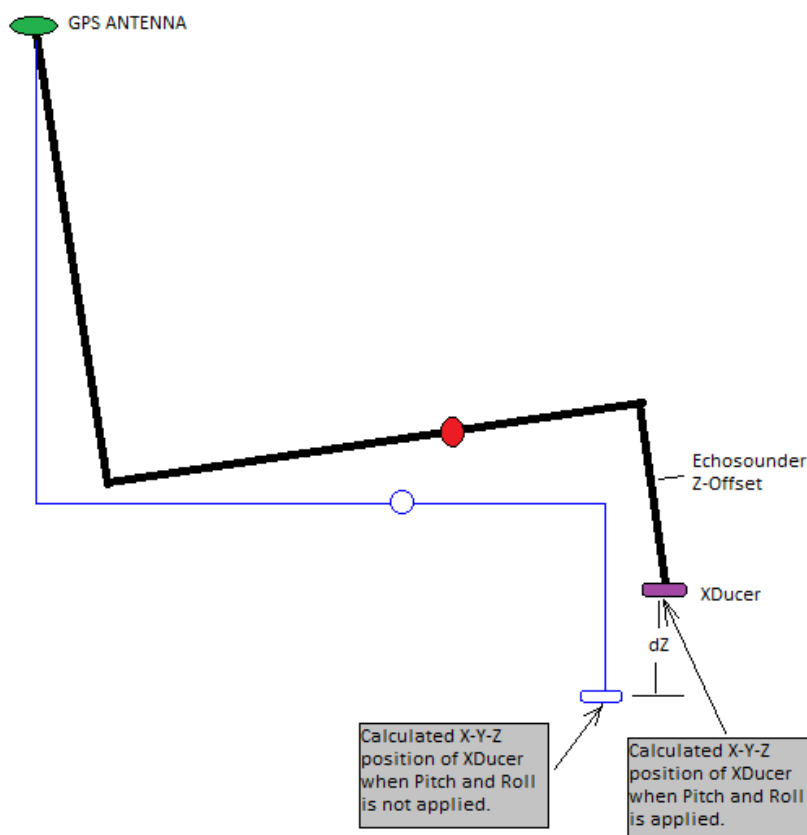
Using the time of the sounding, we interpolate a position for the GPS antenna.

FIGURE 2. Corrected (black) vs Uncorrected (blue) Transducer Positioning

If you do not have pitch-roll data, or if you uncheck “Apply Pitch and Roll Corrections”, then the program applies the offsets of the GPS antenna and the echosounder transducer (XDucer) in order to compute the position (X-Y-Z) of the transducer. The blue lines show the resulting position.

If you have pitch and roll information and check the “Apply Pitch and Roll Corrections”, SBMAX then uses that information to determine an adjusted X-Y-Z position of the XDucer (shown by the heavy black lines).

It also computes the vertical change in position of the transducer (dZ) and applies it to the raw sounding.

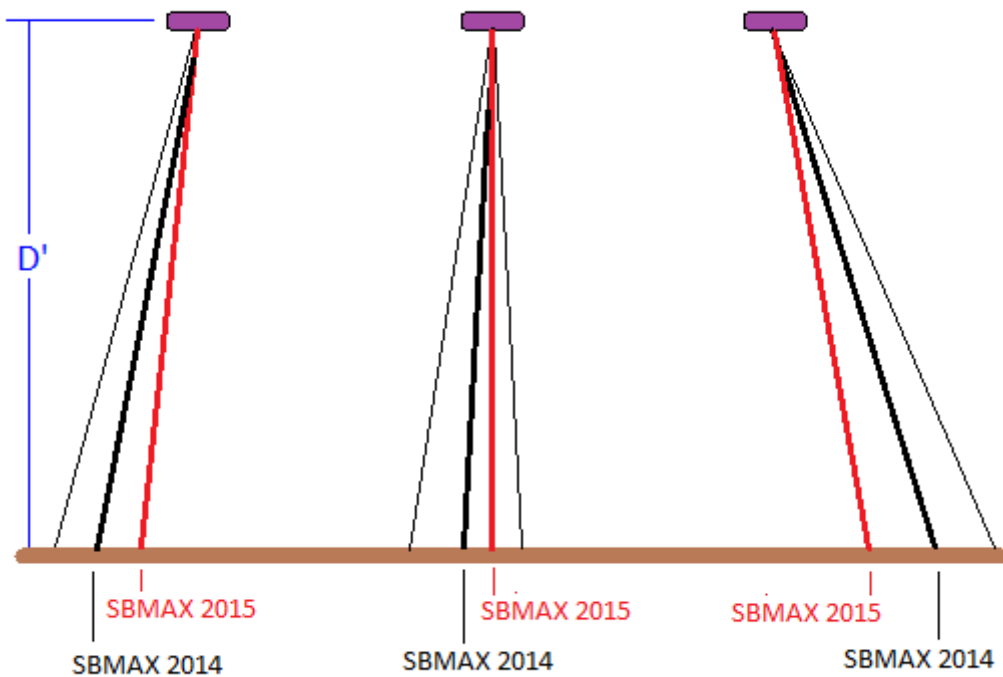


STEER SOUNDING BEAM OPTION

If the Steer Sounding Beam option is unchecked, SBMAX places the sounding directly below the transducer. If it is checked, SBMAX computes an adjusted position and depth for the sounding, using the pitch and roll information.

In SBMAX 2014 and earlier versions, it treated the beam pattern as a pencil-thin ray. This had the effect of placing the sounding at the center of the beam pattern. The result is shown by the heavy black line in Figure 2. The X-Y position for each sounding is adjusted to the computed location of the center of the beam pattern. The raw sounding is also adjusted to D' by multiplying it by the $\cos(\text{pitch})$ and $\cos(\text{roll})$.

FIGURE 3. Steer Sounding Beam—Method Change for HYPACK® 2015



In SBMAX 2015, the routine has been modified. If the pitch and roll is less than the beam width, then the sounding is placed directly below the transducer. If the pitch and roll is greater than the beam width, then the sounding is placed on the edge of the beam pattern closest to nadir. This result is shown by the heavy red line in the figure (above). This will result in slightly different resultant positions than earlier versions of SBMAX. It may also result in slight differences in resultant depths, depending on the magnitude of the pitch and roll.

The Advanced Tab of the Read Parameters window in SBMAX has been modified to allow you to enter the beam width for the Steer Sounding Beam adjustment.