Erratum

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Validation of the stochastic distorted-wave Born approximation model with broad bandwidth total target strength measurements of Antarctic krill

David A. Demer and Stéphane G. Conti

In the computations of SDWBA_{TTS}(f) in Figure 4, the scattered vector was integrated over all orientations in the XY plane, where X is the main axis of the krill, but a factor of 2π was erroneously substituted for the numerical integration which accounts for scattering at all angles in the YZ plane. Also, the krill in the study have since been measured to be appreciably fatter than the generic krill shape. In the revised computations and figure, the girth-to-length ratio was 40% larger than that of the generic krill shape, corresponding more accurately to the shapes of the krill in the study, and the scattered vector was integrated over all possible angles in both the XY and YZ planes. The revised Figure 4 is printed below:

Figure 4. The average TTS of ten aggregations of Euphausia superba totaling 57–1169 animals. TTS data from 36 to 60 kHz had low SNRs (gray circles); those above 60 kHz are considered accurate to about 0.4 dB (black circles). The ±1 s.d. error bands (thin dashed lines) encompass the SDWBA_{TTS} predictions (solid gray), computed with $g = 1.0357$, $h = 1.0279$, $s$ with a 40% larger girth-to-length ratio than that of the generic krill shape (consistent with measurements of the krill in this study), and the overall krill length distribution (see Figure 3). The SDWBA_{TTS} computed with the generic $s$ (all other parameters are the same) is also plotted for comparison (thick dashed gray line). Because the random-phase term caused variations in SDWBA_{TTS} of less than 0.1 dB, expected values of TTS were effectively computed at each $f$ using only a single random realization of phase. Error bounds on the prognosticator are thus negligible.

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In Figure 6, the curves were calculated with a generic krill shape that was inappropriately thin, and the $SDWBA_{TS}$ were too large by a factor of $4\pi$. In the revised computations and figure, the girth-to-length ratio was 40% larger than that of the generic krill shape, and the $4\pi$ error was corrected. The revised Figure 6 is printed below:

Figure 6. SDWBA$_{TS}$ versus frequency (top panel), and krill length (middle) for four commonly used echosounder frequencies. The TS(f) spectra (top) and difference in TS at two or more frequencies (bottom) provide information for acoustically identifying Antarctic krill.