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ENHANCED REVERBERATION BY RIPPLE FIELD FORWARD SCATTER

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A shallow water scenario is considered where a ripple field exists on parts of the sandy seafloor. At long range, sound field is dominated by wave propagating at small grazing angles. The ripples cause the propagating sound to forward scatter to higher grazing angles through Bragg scattering. The higher angle sound is then backscattered by the small bottom roughness. Such backscatter is increased because the bottom scattering cross section is greater at higher grazing angles. This results in enhanced reverberation , a possible mechanism for clutter. Numerical simulations are performed where the propagation on rippled bottom is calculated by the parabolic equation method and the small roughness backscatter is handled using first order perturbation theory. The time-domain reverberation is obtained by Fourier synthesis. [Work supported by ONR]